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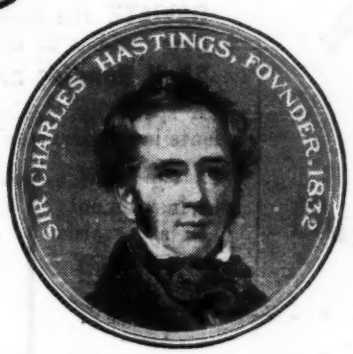

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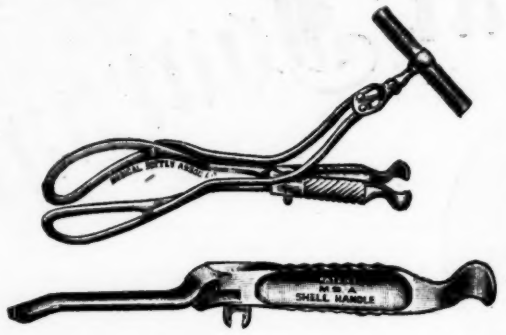

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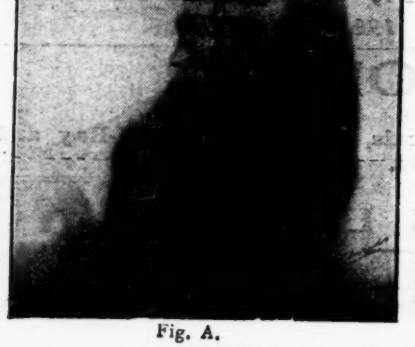

Fig. A.—A slightly dilated and much dropped stomach radiographed immediately after partaking of a Barium (6 ozs.) "Umbrose" Meal. The greater curvature projects 3½ ins. below a line drawn from one iliac crest to the other. *(Taken in the upright position).*

Fig. B.—Shows same stomach radiographed 15 minutes later, the patient having lain upon a couch, the bottom feet of which were raised 9in. *The Belt was then applied.* The patient allowed to walk about for 5 or 6 minutes and the radiograph *taken in the upright position.*

Extract from article, "*The Diagnosis and Treatment of Gastroptosis.*" by Major HALL-EDWARDS, in *B.M.J.*, May 14, 1921:—"By far the most important item in the treatment is the special abdominal belt for holding the stomach up."

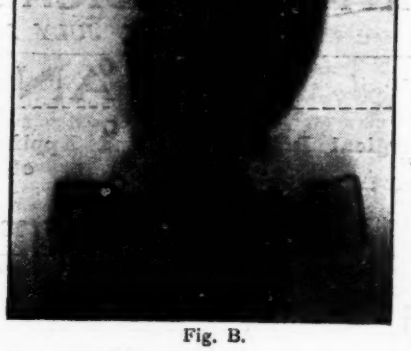

Fig. A. Fig. B.

Write for Particulars and Measurement Forms.

A British Medical Association Lecture
ON
THE DRUG HABIT.*

BY

W. E. DIXON, M.D., B.Sc., F.R.S.,

READER IN PHARMACOLOGY AND ASSESSOR TO THE REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE.

OUR conscious life may be regarded as a collection and perception of sensory impulses. The ever-changing conscious personality is controlled in adult life by centres which develop only after the age of 10. These later developed centres, such as those of control, judgement, attention, and choice, govern the lower centres, such as those of emotion, so that natural emotions are rarely expressed in adult civilized and cultured life. The repression of sexual emotion is an example, and it is an everyday experience that with age our memory for proper names fails, not because of any loss of function of nerve tissue, but by a repression caused by the exaggerated activity of the higher centres. The subject is bound up with what we have come to term psychotherapy.

But repression, like other higher faculties of mind, is very different in different individuals. Some are so highly reflex, so easily responsive to external impressions, that the associations set loose by any ordinary stimulus cause such a complexity of cerebration that the ordinary affairs of life become a burden. Such people are not phlegmatic and uninteresting, but are rather those possessed of quick perception, acute sensibility, and other higher attributes of mind which go to make up high breeding and culture.

But such a complexity of cerebration cannot continue long; soon it gives place to fatigue, depression, and mental distress. Such people we term neurotics, and they form a class peculiarly prone to succumb to narcotics.

Increased nervous sensibility appears to be a product of civilization and wealth, of indoor life, luxury, and perhaps excessive indulgence in the satisfaction of desires. It is difficult to form an estimate of this factor, but attempts have been made to gauge relative sensibility in different nations by estimating the number of women who employed anodynes during normal parturition. The figures obtained were—for the United States 70 per cent., Great Britain 50 per cent., and for Spain and Russia 5 per cent. The figures are interesting in view of the prevalence of drug addiction in the States.

A tendency has shown itself in recent years to classify patients into two groups—those exhibiting an excess of vagotonia, like dogs, and those exhibiting an excess of sympatheticotonia, like cats. These two types of people, if they receive the same stimulus, respond differently. The members of the one group may grow pale and their pulse slow, while members of the other may flush and their pulse race. Dogs die in the early stage of chloroform narcosis by vagal inhibition and cats by ventricular fibrillation, probably induced by sympathetic stimulation.

These neurotics always belong to the sympathetic group; they easily weary of the strain and anxiety involved in the fight for existence, and anything that gives them relief from their cares and anxieties is seized with avidity. Now it is these higher faculties of mind which are most responsive to narcotic poisons; they are influenced long before those concerned with movement and ordinary sensation. So that such abnormal people, under the influence of narcotics, lose the exaggerated effect of their normal sensations, and become more like normal people; the everyday trifles and inconveniences of life are no longer exaggerated out of all proportion to their significance, and life, instead of being oppressive and anxious, becomes pleasant and free from worry. Sometimes the very acuity of their intellect is their undoing. Perhaps in a few special instances persons possessed of such vivid sensations may benefit by a narcotic which limits these conflicting impulses by allowing a freer play of the higher mental faculties; certainly the records of De Quincey and Coleridge suggest such a possibility.

I have no doubt that the drug addict is a psychopath before ever he becomes addicted, that the ordinary normal man or woman is as unlikely, even with every facility at hand, to become an addict of morphine or cocaine as he is to become a drunkard. A lady who for a short period worked in my laboratory injected herself daily with morphine until 2 grains were reached for each injection. She gave it up without difficulty, and with no inconvenience after the first day. It is, I suppose, a recognized fact that the drunkard takes to excess of alcohol just as he does everything else that is foolish and wrong—in other words, that drunkenness is one symptom of an abnormal mind.

No one had a more extensive experience as an inspector under the Inebriates Act than Dr. Braithwaite: he is doubtful whether habitual inebriety is ever acquired, and thinks that these people start life handicapped by an abnormal brain. Sir Frederick Mott, at the Glasgow meeting of the Association, expressed similar views. The drug addict is a product of modern civilization, and addiction is a symptom of a diseased mind. For many hundreds of years Christian nations regarded the insane as people possessed of the devil; they were tortured, burned, and subjected to every indignity, and yet insanity continued. Almost the same condition is coming about now with drug addicts. I read that in July, 1921, the New York City Board of Health permitted the incarceration of drug addicts. The police imprisoned several, and the sudden withdrawal of the drug caused the death of one and collapse of several others.

I propose now to mention the substances more commonly used for addiction. Opium or one of its derivatives is the commonest addiction drug; it may be eaten, smoked, or injected. Eating opium or drinking laudanum is rare amongst Europeans, possibly on account of the constipation, the delayed absorption, and the difficulty in obtaining the large supplies necessary. It is, however, not uncommon in India, and its general use led to the Commission of 1895, which reported that moderate indulgence led to no injurious effect and did not shorten life, but that, on the contrary, it tended to ward off sickness and lessened the discomfort consequent on poor food and on malaria and other diseases. Opium is still taken in the fen district of England as a remedy to ward off the ague, a disease which has long ceased to be endemic. In India the opium habit appears to be comparable rather with our smoking than with the morphinist; it is a habit of middle life and advancing years, whilst modern statistics show that 70 per cent. of the European and American morphinists are under 30.

Opium smoking is also mainly an Eastern habit, although it obtained a distinct vogue in the United States of America until it was superseded by the infinitely more objectionable method of injection. The amount of alkaloid absorbed in the smoke is very small, both because the amount of opium used in the pipe is small, and because most of the alkaloid in the opium is destroyed. Absorption is rapid and an immediate effect is produced. Whether this is really due to the morphine I am not prepared to say, since even by smoking all day it would be difficult, if not impossible, to absorb half a grain. The morphine in ten pipes only contains about half a grain, and 99 per cent. of this is destroyed in combustion. After the first few whiffs there is a feeling of elation, followed in the habitué by delightfully languid ease, an exalted sense of superiority, and later by dreamy sleep. The smoker becomes a slave to the habit, and the evil is enhanced—at all events in the West—because the devotee must indulge in his vice in the worst possible surroundings. Opium smoking is the least objectionable form of the vice, because the amount of alkaloid taken is so small, because a strong craving is not formed, and because "cure" is relatively easy, since here we are dealing with a group indulgence, not a secret vice like that practised by the true morphinist. Withdrawal symptoms are never observed.

In Europe and America the alkaloid is usually injected: this is the most pernicious form of taking the drug, and to obtain the requisite relief the devotee must be continually increasing the dose. The amount of morphine injected daily varies greatly; 15 grains is an ordinary quantity for a morphinist to use in the twenty-four hours, though he will double this in the case of any trifling trouble.

Heroin has been used as a substitute for morphine and as an addiction drug since about 1913. This proprietary remedy was easily obtained and was even exported to the East as a cure for opium smoking. The addict often prefers heroin to morphine, since it is less constipating. The average morphine addict has perhaps one or two stools weekly, whereas the bowels of the heroin addict act almost normally. Heroin has no advantages over codeine or morphine, and its use might be forbidden without harming a single genuine patient.

* Delivered before the East York Division of the British Medical Association, at Hull, on February 9th, 1923.

EXTENT OF DRUG HABIT.

Reliable statistics are almost impossible to obtain, and such information as we have comes principally from America. Thus the report of the Special Commission of Investigation appointed by the Secretary of the Treasury in the United States in 1918 gives the following consumption per head per annum in 1910:

Austria	about ½
Germany	... 2
France	... 3
United States of America	... 36

Ninety per cent. of this American traffic is probably used for other than medical purposes. The Commission of the Treasury, U.S.A., in 1921 estimated that the country contained at least one million addicts. From all parts of America we find the same tale. In December, 1914, the Harrison Narcotic Law came into existence; it had the support both of the public and the medical profession. In effect this law dictates the manner of practising medicine, and involves many irksome details and much clerical work for the doctor. It includes an army of officials—Federal, State, county, and city—and every grain of narcotic must be accounted for. It has now been actively enforced for seven years, and it is the universal opinion of those best able to judge that it has signally failed in its purpose. The number of addicts and the amount of narcotic consumed is as great or greater than in 1915. I believe the main reason for this is to be found in the fact that the law takes no account of the causes of addiction: the drugger is regarded as a criminal just as were the insane in mediaeval times. Everything can be obtained if the price offered is appropriate to the risk, with the result that smuggling is rampant on the Pacific and Atlantic coasts, from Canada and from Mexico. Distribution is organized by underground channels by means of the so-called dope pedlars. In other words, the law has not altered the supply, but only the distribution of the supply.

Our own less stringent law came into force in September, 1921, and it is too early yet to appreciate its effects. But such drastic laws should make us extremely anxious; they may easily increase the very vice they aim at arresting, for they put a high premium on smuggling, and once the illicit drug dealer obtains a hold on the community an evil is produced infinitely greater than before, when the drugs could be obtained at a fair price through recognized channels.

Much of the increase in drug addiction has without doubt been started in ignorance; opium smoking was regarded as a harmless pastime to be relinquished as desired; the employment of the "white snuff" cocaine served as a stimulant and pick-me-up; and heroin was used as a substitute for morphine with the idea that it was not an opium derivative. There is much evidence that the difficulty in getting alcohol leads people to try any substance which may have a "stimulant effect." But such people are neurotics, their mentality compelling them to search for any remedy to relieve their mental distress. To the normal man opium smoking or cocaine sniffing started in ignorance or in the spirit of adventure or bravado produces little or no pleasurable effect; and although from time to time the process may be repeated I do not believe true addiction ever occurs. The addict always finds it to his advantage to co-operate with the distributor of his drug, and almost never will he give information leading to disclosure of the source of supply.

The chief characteristics of the drug addict are plausibility and disorderliness; they are essentially creatures of impulse. They have little regard for time; appointments are not kept; rules of ethics are scarcely regarded and the conventions are allowed to lapse. When under the influence of their drug the attention can be concentrated for a time and they can write and work, though in a slovenly fashion. The fresh injection gives them a feeling of energy and well-being.

WITHDRAWAL.

Addicts are held in addiction largely through fear. Prolonged indulgence often fails to give them pleasurable sensations; still they must go on in order to avert the crisis of withdrawal. Their horror of pain, both mental and physical, is an obsession, and contact with the responsibilities of the world they feel is not to be borne.

The symptoms of withdrawal correspond almost exactly with stimulation of those tissues which morphine in medicinal doses depresses. The yawning, sneezing, nausea, vomiting, and mucous secretion result from stimulation of the medulla; the abdominal pains and diarrhoea from stimulation of Auerbach's plexus; the twitchings, cramps, circulatory troubles (rapid pulse, arrhythmia), and sometimes even convulsions, and collapse hardly distinguishable from surgical shock, are due to excessive stimulation of the cortical cells. Perhaps one of the first and most characteristic effects of withdrawal is a rise in blood pressure from excessive activity of the medulla; this is followed later, at all events in severe cases, by a marked fall in the pressure associated with the collapse. A patient seen with these symptoms, even when in a state of collapse, on receiving an injection of his drug exhibits a transformation almost miraculous; he becomes in a few minutes a relatively normal person. Nitrites in cases of early withdrawal produce much the same effect as morphine on the blood pressure, but do not relieve the mental condition.

Sudden cessation of alcoholic beverages in those who have imbibed too freely for a long period may also lead to withdrawal symptoms, which we term delirium tremens.

The explanation I suggest to account for these withdrawal symptoms is that nerve cells, after prolonged narcosis, on reawakening become hyperexcitable. The contrary effect is an everyday axiom, that stimulation is followed by depression. Another explanation has been suggested by the fact that morphine and cocaine maniacs must be continually increasing the dose to get the necessary effect. This acquired tolerance is at least partly explained by the enhanced power of the tissues to destroy the alkaloid. On this we have decisive evidence. But it is also suggested that this acquired tolerance, this inability of cocaine, morphine, and other drugs to produce their normal action on the brain, is due to some substance which neutralizes the effects of the poison.

Valenti rendered dogs tolerant to morphine, and found that on suddenly stopping the drug the animal showed typical withdrawal symptoms. He alleges that injection of the serum from these dogs into normal dogs caused similar symptoms. This view is now completely disproved. No antibody formation ever occurs in animal or man from the injection of such relatively simple substances as the alkaloids.

COCAINE.

It has long been known that the Indians in the west of South America, especially in Bolivia and Peru, used coca leaves to chew as a stimulant and narcotic. The Indian uses coca as we use tea and coffee as a stimulant in mental and physical fatigue. Travellers assert that by chewing this leaf they are able to perform long and rapid journeys with less fatigue and without feeling the pangs of hunger and thirst. Experiments in the laboratory, using the ergograph, suggest that these effects are due to cocaine, but experiments by Europeans in the Alps have not been very successful.

Cocaine as an addiction drug is taken either as snuff by the mouth or by injection, and absorption by the nose is as rapid as by injection. Cocaine powerfully excites the central nervous system, inducing a feeling of energy and restlessness. The flagging nerve cells are whipped into activity, and lassitude and fatigue pass; but this is accompanied by clouding of associations and some depression of the central nervous system always succeeds the stage of excitement. Cocaine fascinates by the rapidity with which it relieves exhaustion and dispels gloom and by a delightful sense of mental and physical vigour. Morphine acts not by stimulating, but by depressing sensory nerve cells in the brain, so that fatigue and mental and physical pains are assuaged.

The pure cocaine habit is not very common. The many cases reported in the newspapers were rather cases of users of the drug for specific purposes than cases of addiction. Our men on short furlough during the war were necessarily in an emotional state; anything which helped forgetfulness was seized, and cocaine, used by snuffing, fulfilled the condition. The debauch ended, on the following day there was no desire to repeat the experiment and no craving. Cocaine was used as a rapid and exhilarating intoxicant. Used regularly it might in some instances have led to addiction, but for the most part it did not.

Tolerance can be acquired to cocaine like morphine, but it is less definite and slower in formation; still there are several cases on record in which 100 grains were taken daily. The prognosis in such addicts is better than with morphine, the abstinence symptoms are less severe, and the cocaine can be cut off at once. Cocaine compared with morphine is relatively unimportant in Europe, and there are few cases of cocaine addiction compared with opium. The discomforts caused by cocaine are readily controlled by morphine, and when the

patient learns this the addiction becomes confirmed and of the most serious character.

The other cocaine-like substances which might lead to habit are stovaine, tropacocaine, and perhaps holocaine, though cases of addiction to these are unknown to me.

To some extent fashion or opportunity determines the type of drug used. In New York heroin is used almost entirely, in Chicago morphine is the common narcotic, and in cities with a large coloured population cocaine is in vogue.

TREATMENT.

The first and principal fact to remember in treatment is that the addict is not a mentally normal man, and the problem is not so much whether we can temporarily stop the addiction as whether we can educate his mind so that temptation can be withstood—in other words, to alter his character. Simply to control conduct so that choice cannot be exerted is to court disaster.

The following examples will show the effect of custodial care alone.

The Department of Health of the City of New York publishes statistics and details by medical experts of nearly 8,000 cases of drug addicts during ten months; 1,580 received at the clinic were willing to accept treatment and withdrawal of the drug. Those treated were kept six weeks and discharged in good physical condition "cured." In three months a large proportion had already relapsed, in spite of all efforts made to assist them.

Dr. Doane, speaking in November, 1920, stated that there had been treated in the Philadelphia Hospital 3,500 cases of drug addiction, four-fifths of which were heroin and cocaine. These patients were mostly from the lower strata of society. Dr. Doane thought that 3,400 or 3,500 had relapsed. In Los Angeles the Board of Health, with the assistance of the municipal authorities, started a narcotic clinic where addicts got their supply at a nominal price without criminal risk. This system had several advantages: the victims were able to work again; illicit peddling was reduced to a minimum; the addicts became known; but the system was much abused and cures were not effected.

It is generally recognized that of all addicts those that contract the habit as a result of disease are easiest to cure. All addicts desire to be cured but fear the withdrawal symptoms. An addict may beg to give up the habit of his own free will and submit to restraint, but as soon as his wishes are acceded to he will endeavour to render restraint unavailing, and he is so well versed in the literature of the subject that he finds a ready reason for anything he does. He is quite unable to resist an opportunity to cheat if the occasion offers. To ensure even a temporary cure restraint and custodial care are therefore essential.

The chief reason against restraint is that our object is not so much the temporary suppression of the morphine as the cure of the desire for it, and the best way of effecting this is by the re-education of the dormant will.

Under restraint the drug can be gradually reduced, and generally ten days will suffice to bring it down to *nil*. Some authorities substitute rectal administration for the injections, and some codeine for morphine. Many of these neurotics would do anything rather than diminish their injections; they take a morbid pleasure in injecting something under the skin. During the cure intensive purgation should be carried out. Morphine is the only alkaloid excreted by the alimentary canal, and it is well to get rid of it and prevent reabsorption.

The drug which is perhaps most useful in the treatment of addictions of all kinds is atropine, or, better, hyoscine. Hunger and to a smaller degree thirst are caused by conditions of the stomach, and atropine and hyoscine control the motor nerves to the stomach and intestine. It is more than likely that morphine craving has some association with the stomach. Many other drugs are, however, employed: nitrites and sparteine to lower blood pressure during the withdrawal symptoms, alkalis to combat the dyspepsia, and such drugs as valerian or asafoetida to produce a profound psychical impression. De Quincey found much benefit from valerian. To effect a cure the patient must be made to live a methodical life, to partake of temperate meals, and to observe orderliness in everything, all of which are loathed by the neurotic and morphinist.

In conclusion I desire most strongly to protest against the modern tendency to regard these people as criminals; they are and should be regarded and treated as mental cases, addiction being the prevalent symptom at the time. The Harrison Narcotic Law has proved a failure in America, yet our own authorities have legislated on parallel lines, and time only will show whether the cure is not worse than the disease.

Since this lecture was delivered an amending bill to the Dangerous Drugs Act of 1920 has been read a second time in the House of Commons and referred to a Standing Committee. It proposes that these narcotic drugs shall be purchased only by registered medical practitioners in actual practice, whatever that may mean. I suppose all registered medical men are in actual practice, though many of us are not in practice for profit. Very large quantities of morphine and cocaine are used by the various chemical and pharmacological laboratories throughout the kingdom. Medical students may be required to detect morphine in solution and to investigate its properties on isolated mammalian tissues. Alkaloidal chemistry without morphine and cocaine is indeed unthinkable.

The second objectionable provision is that the practitioner may not prescribe for himself; horrible penalties are attached to infringement of both these provisions. Almost one is tempted to ask, Can legislators be so foolish as to attempt to pass laws directly concerning medical men which are against the whole feeling of the profession and which are calculated to cause intense resentment? If the drug traffic is to be exterminated then all our hope should be centred on the registered practitioners in this country, and to make bad law by legislating for a hard case or two will do infinitely more harm by alienating the majority of the profession than the mite of good.

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[*Abstracts.*]

LECTURE III.—THE POSTURAL ADAPTATIONS OF THE SHOULDERS AND THORAX.

AT the end of a long day's tramp most of us have become aware of a vague aching pain in the region of the shoulders. Nor need we feel surprise when we remember the heavy burden we have had suspended from our neck throughout the day—the load represented by the upper extremities. In a man of average weight the shoulders and arms represent a burden of about 20 lb. They are suspended from the cervical and upper dorsal regions of the spine—chiefly by the trapezius muscles and particularly by the fibres inserted in the neighbourhood of the tip of the shoulder. Then there is another composite sheet of muscle, made up of rhomboid and serrate parts, which is also concerned in maintaining the shoulders in position. By the rhomboid muscles the vertebral base of the scapula is supported from the lower cervical and upper dorsal spines; by the serratus magnus the base of the scapula is steadied on the side of the thorax because that muscle springs from the eight upper ribs. We may look on the rhomboids and serratus magnus as forming a continuous muscular sheet passing from spines to ribs; within it the base of the scapula is embedded and steadied. The levator of the angle of the scapula, originally part of the serratus sheet, is also concerned in balancing and supporting the shoulder from the neck. Now and again, once in a hundred subjects, we see another muscle helping in the support—the levator claviculae. It is strange that man is the only one of the higher primates in which this muscle has become vestigial; it is also noteworthy that in the chimpanzee this muscle is small and tends to disappear. The sterno-mastoid and pectoral muscles also play a subsidiary part in supporting and balancing the shoulder.

SUSPENSORY MECHANISM OF THE SHOULDERS.

When we stand or sit a postural reflex mechanism is brought into action which keeps the shoulder muscles constantly at work until we lie down again. How complex this

mechanism must be is to be inferred from the observation of Dr. Gordon Holmes; he noted that when the cerebellum was injured on one side, the shoulder of the same side had dropped downwards and forwards, because the postural tone of the supporting muscles was partly lost. Professor Wingate Todd[1] has stated that, in passing from infancy to adult life, a progressive dropping of the shoulders takes place; both outer and inner ends of the clavicle descend, but the descent is greatest at the outer ends.

Dropping of the Sternum and Ribs.

The falling of the shoulders is not an isolated occurrence, but part of a process in which the whole thoracic region participates. This dropping or ptosis, which may be recognizable by the end of childhood, becomes clearly evident by the end of the third decade. The sternal ends of the ribs and the sternum itself come to take up a respiratory position at a level of one or more vertebrae lower down than in childhood. The level of the domes of the diaphragm descends, the oesophagus becomes elongated, the lateral segments of the ribs more oblique in position, the angles formed by the ribs with their cartilages more oblique. With the descent of the ribs the back-to-front diameter of the thorax is necessarily diminished; Wintrich found that in people who had passed middle life the front-to-back diameter of the thorax had become reduced by 33 mm. in men and 26 mm. in women. The diminution in side-to-side diameter is much less.[2] An exaggerated degree of this normal dropping of the shoulders, with a diminished or inspiratory poise of the thoracic walls, must be regarded as a result of an exhaustion, or partial exhaustion, of the postural muscles which support the shoulders and ribs when the human body occupies the upright position.

Pressure on the Brachial Plexus.

If the tonus action of the supporting muscles of the shoulder should fail, then a strain must fall on the brachial plexus, particularly on the lower cord as it crosses the first rib. This is especially likely to be the case if the lower cord has to cross a rib attached to the seventh cervical vertebra. Bramwell and Dykes state that not more than 5 or 10 per cent. of cervical rib cases develop symptoms of nerve pressure. Carriers of cervical ribs are certainly more liable to pressure symptoms than those of normal development; the essential circumstance which gives rise to symptoms of plexus pressure is not the presence of a cervical rib, but a failure or partial failure of the mechanism evolved for the support of the shoulders in the erect posture.

A Late Product of Evolution.

The postural mechanism for the maintenance of man's shoulders is a human character of late evolution; it must have come with the adaptation of his lower limbs as the sole organs of support and progression. Man is a flat-backed and broad-shouldered animal; his shoulder blades are placed on the back rather than on the sides of his chest. In these features, however, man does not differ from other members of the orthograde group of primates—the gorilla, chimpanzee, orang, and gibbon. He differs from them in this circumstance—that in the climbing, moving arboreal anthropoid the arms and shoulders have to sustain or help to sustain the weight of the trunk, whereas in man the trunk has to sustain the weight of the shoulders and arms. In the anthropoid shoulder all the essential structural features of the human shoulder are already present; we have only to suppose the perfecting of a supporting reflex postural mechanism for the shoulders and a reduction in the length of the arms to realize how the anthropoid condition might become human. Suspension of the upper extremities is a late product of evolution and must be regarded as a human characteristic.

Supports of the Pronograde Thorax.

In tracing the evolutionary stages which led on to the human spinal column we found that the great break in the series came not between the human phase and the great anthropoid phase, but between the lowest of the orthograde apes—the gibbons—and the highest of the pronograde monkeys. When we seek for the stages which lead on to the human position of shoulders and shape of thorax, we find the real break in the series again occurs at the passage from the pronograde to the orthograde form. If we would understand the changes involved in the evolution of the human shape of thorax and the human mechanism of respiration, we have to go back a long way in our geological history and formulate a theory which will account for the origin of the orthograde gibbon. One has to note particularly the manner in which the thoracic part of the body is supported on the arms or forelimbs of pronograde monkeys. The back is narrow and the shoulders are set by the side of the thorax, coming close together on the back almost as in a dog. The ventral or sternal aspect of the thorax is also narrow; the body of the sternum itself is a jointed rod. The lateral walls of the anterior part of the thorax are flattened and the scapulae are placed against them. By a series of muscular slings or hammocks the weight of the body is transferred to the upper limbs and shoulder girdles. Chief of these muscular slings or supports are the right and left great serrate muscles, which, rising from the lateral aspect of eight anterior ribs, ascend to be inserted to the vertebral borders of the shoulder blades. The two levator muscles to the angles of the scapulae continue the serrate hammock into the neck; they arise from all the transverse processes of the neck. The rhomboid sheet binds the vertebral border of the scapula to the spinous processes of the neck and upper dorsal region; the trapezius muscles also assist. A secondary muscular hammock is formed by the right and left pectoral sheets (pectoralis major, pectoralis minor, pectoralis externus). They pass from the sides of the sternum and adjacent ends of the costal cartilages to find insertions to the upper ends of the humeri. The flattening of the chest from side to side and the approximation of the shoulders are adaptations to the pronograde manner of progression and of thoracic support.

Shaping of the Orthograde Thorax.

Many occasions in the arboreal life of a monkey arise when branches have to be clutched by the hands and the whole weight of the body supported from the arms. The muscular slings which attach the shoulder girdle to the body in these circumstances take on a new action; the thorax of the animal now becomes compressed between the ventral and dorsal muscular slings and so tends to be flattened in a back-to-front direction. Now this method of arm suspension, which is only occasional in pronograde primates, has become habitual in gibbons—the arms are the main means of support and progression. The thorax has become flattened before and behind, its sides are rounded, the ribs are drawn up as if they were in a position of extreme inspiration. The pectoralis major—a main part of the muscular sling—has no longer a mere sternal origin as in pronograde apes, but has extended its base of attachment upwards to the clavicle and outwards on the fifth and sixth costal cartilages, almost to the bony ribs. The origin of the pectoralis minor has become shifted from the side of the sternum outwards almost to the costo-cartilaginous junctions. The trapezius, rhomboids, and latissimus dorsi form the dorsal part of the muscular sling for supporting the weight of the body from the arms. In pronograde monkeys the latissimus arises merely from the spinous processes of the back, but in gibbons its origin has been extended forwards, so that it has a fascial origin from the iliac crest and direct muscular origins from the three or four lower ribs. The serratus magnus, now strong and highly specialized, plays an important rôle as a muscular sling. It exerts a traction on the side of the thorax tending to increase the lateral convexity of the ribs and the side-to-side diameter of the thorax. The shoulder, instead of being placed laterally as in pronograde forms, becomes drawn outwards and backwards and thus comes into being the broad-shouldered figure which characterizes all orthograde forms, including man.

Are the Effects of Use Inherited?

Some thirty years ago I was of opinion that there was no other way of explaining the peculiar features of the gibbon's thorax except by supposing that some pronograde primate had adopted a brachiating habit of progression and that the chest, by inheritance of the effects of use, under the suspensory action of the shoulder muscle slings, had become transformed from a pronograde into an orthograde type. This idea I have abandoned for the following reasons: No alteration in use can cause a migration in the origin or insertion of a muscle—such as we see in the attachments of the muscles directly concerned in slinging the thorax from the shoulder in orthograde apes. During the period of development we see the process of muscular migration actually taking place; it is a developmental process carried out by a force the nature of which we do not yet comprehend, but we cannot conceive a way by which it could be influenced by inheritance of effect. Further, we note, particularly in certain kinds of pronograde monkeys,

tendencies for certain muscles to migrate in a certain direction—tendencies which have become exaggerated and take place regularly in orthograde apes. We see a process, which is tentative and incipient in more primitive apes, become fully effective in the later and more specialized orthograde forms. In such manifestation we have clearly to do with a developmental or growth mechanism; it is one which affects not only the attachments of the upper limbs to the body and the shape of the thoracic walls, but involves a simultaneous alteration of all the structures concerned in respiration—lungs, bronchi, trachea, pleura, diaphragm, the great blood vessels in the heart itself. It is these latter structures which now demand our attention.

Evolution of the Flat Broad Sternum.

Amongst the most remarkable changes which took place during the evolution of the orthograde posture was the transformation of the sternum. In the higher pronograde monkeys the breast bone, all save its first part or manubrium, is made up of rod-like segments, usually five in number. In all orthograde primates—the gibbon, orang, chimpanzee, gorilla, and man—the sternal segments ultimately become fused and form a stout, plate-like structure—the short sword sternum. The widening and stiffening of the sternum has greatly strengthened the anterior wall of the orthograde thorax. It is easy to see why the sternum should become strong and plate-like. When the upper limbs become used for the purposes of suspension and prehension greater stresses must fall on the thorax—particularly the parts to which the pectoral muscles are attached. Although the primary reason for the transformation of the sternum is connected with posture and locomotion, such a complete change in the structure of the sternum must have reacted on the mechanism of respiration. It led to the development of upper thoracic or chest breathing.

The Importance of the Interchondral Facets.

Often the consideration of minor points of structure will guide the anatomist towards important conclusions. Medical men must often have noted the articulations between the fifth and sixth and sixth and seventh costal cartilages; the upper cartilage throws down an elbow, which comes into contact with the cartilage below; at the point of contact there is a synovial facet. In only three animals do we find these elbows of cartilaginous contact—man, the gorilla, and chimpanzee. They are not present in either gibbon or orang; in them the suspensory use of the upper limbs has become predominant in locomotion, and in consequence they have become "pigeon-chested"; nor are they present in pronograde apes or monkeys. We obtain a clue to the functional meaning of the intercartilaginous facets if we consider the mode in which the diaphragm acts in pure thoracic breathing. The diaphragm then exerts its power, not in depressing the abdominal viscera but in raising the anterior or ventral ends of the ribs to which it is attached—namely, the lower six. Through the cartilaginous heels on the fifth and sixth cartilages its power is extended to the solid plate-like sternum, which it also raises. As the sternum is elevated it will be found that a bending or flexion takes place at the joint between the body of the sternum and the manubrium or presternum. Further, we note in the highest of the orthograde primates, particularly in the human thorax, that the first pair of ribs and manubrium become more and more welded together to form a single functional structure, for which I have proposed the name of "thoracic operculum." The thoracic operculum is set obliquely; it is hinged behind to the first dorsal vertebra; it rests in front on the body of the sternum; it is almost stationary if the respiratory movements are purely of the abdominal type, as in pronograde apes; it becomes a freely moving structure when respiration is of the thoracic type.

Rise in Importance of the Apical Region of Thorax.

That the evolution of the orthograde posture gave an enhanced respiratory importance to the upper thorax is seen from another line of evidence. The straight muscles of the abdomen are the flexor muscles of the spine. In the thoracic region they are attached to the ventral ends of ribs; behind, to the ventral or pubic end of the pelvic girdle. These structures serve as powerful spinal levers; through these levers the straight muscles are more than a match for the extensors of the spinal column. Now, in the human body, as in that of all orthograde primates, the straight muscles take hold of the fifth, sixth, and seventh costal cartilages. In the older pronograde forms the straight muscles extend their origin forwards to the whole length of the sternum and to the first pair of ribs—as is the case in all the more primitive vertebrate mammals. With the evolution of the orthograde posture the origin of the straight muscles was withdrawn from the four upper ribs, thus setting them free for a new kind of movement. This retreat of the straight muscles was accompanied by that of the external obliques and scalenus medius. Thus all the structural transformations which occurred during the evolution of the orthograde posture led to the freedom and increased respiratory importance of the apical region of the thorax. We shall see that these changes in the walls of the thorax were accompanied by corresponding modification of the apical region of the lung.

Postural Changes within the Thorax.

Up to this point our attention has been concentrated on the modifications of the thoracic wall involved by the change from a pronograde to an orthograde posture. We are now to enumerate, as briefly as possible, the structural alterations which took place within the thorax. The dissection which best suits our purpose is one often practised by human anatomists; extensive windows are cut in the lateral walls of the chest and through these the root of each lung is exposed, then cut through and the lungs removed. The mediastinal wall is thus exposed, and we can note the exact form of each pulmonary cavity. When such a dissection is made of one of the commoner pronograde monkeys, we are at once struck by the oblique position in which the diaphragm is set; its domes slope from the lower end of the sternum towards the eleventh pair of ribs. If we make a similar dissection of a gibbon we find the diaphragm arranged much as in man; the central tendon has become cordiform in shape and the domes of the diaphragm nearly horizontal in position. The flattening of the dorsal and ventral wall of the orthograde thorax has altered the contour of the diaphragm, giving it a wide cordiform shape. The chief structural changes concern the muscular fibres of the crura of the diaphragm. In pronograde monkeys the crural or spinal fibres are widely separated from the costal fibres by an interval filled by a fibrous membrane. In the gibbon, as in all orthograde forms, the fibrous interval is obliterated by the outward migration of crural fibres: the origin of the outer fibres has become shifted from the bodies of the upper lumbar vertebrae, over the sheaths of the psoas and quadratus lumborum muscles. We have here another example of muscular migration playing a part in an evolutionary movement.

Fixation of the Heart.

When we compare the thoracic dissections of the monkey and gibbon we see that the orthograde posture has entailed an alteration in the position and also in the fixation of the heart within the thorax. The point which particularly catches our attention in the monkey's thorax is that the inferior vena cava, instead of at once entering the pericardium on appearing above the diaphragm, as it does in man and in all orthograde apes, has a course of some two inches before it enters the base of the heart. Only the apex of the pronograde heart comes in contact with the diaphragm. Between the heart and diaphragm passes a sinus or diverticulum of the right pleura; the mouth of this subcardiac sinus lies internal, or medial, to the inferior vena cava; it is occupied by the azygos lobe of the right lung. When the diaphragm contracts the azygos lobe is distended, this inspiratory descent being accompanied by a stretching of the highly elastic inferior vena cava. In the gibbon the heart is bound more closely to the diaphragm, but an azygos lobe and a reduced subcardiac sinus are clearly recognizable. In the great anthropoids and man the base of the heart has become firmly bound to the diaphragm; in all of them a vestige of the azygos lobe of the right lung and of the subcardiac sinus are unmistakably present. There is no better proof of man's pronograde ancestry than the evidence he carries in his right lung.

Development of the Apical Region of the Lung.

As the orthograde heart settled on the upper surface of the diaphragm it lost the tapering form seen in pronograde animals, and assumed the blunt conical form we are familiar with in man's body. But why does the base of the heart become so closely attached to the diaphragm in orthograde forms? It is because of the increased development of the apical region of their lungs; the supraradicular parts of the lungs can be thoroughly aerated only if the roots of the lungs

participate in the respiratory movements of the diaphragm. The heart and pericardium are fixed to the roots of the lungs; in orthograde forms the pericardium becomes bound to the diaphragm.[3] Thus with the evolution of the great anthropoids there came about a new relationship between the diaphragm and roots of the lungs; the central tendon of that muscle became yoked to the roots of the lungs through the pericardium. In the chest of man this relationship is even more intimate than in anthropoids. For the proper aeration of the apical part of man's lungs diaphragmatic movements are essential.

Other Respiratory Changes.

It would take us too far afield were we to analyse all the intrathoracic changes which mark the evolution of the orthograde posture. The arch of the aorta and the manner in which it gives off its great branches became altered; the human arrangement is linked on to the pronograde type by a series of intermediate stages seen in the great anthropoids. The lung assumed a conical shape, with the wide and hollow diaphragmatic base with which we are familiar in human anatomy. The fissures of the lung become less deep; they have almost disappeared from the lungs of the orang. The apical lobes become larger, the inferior lobes, particularly the parts which fill the hinder and lower recesses of the pleural cavities, smaller. The distribution of the bronchial tree was changed, the apical supply becoming increased.

SUMMARY.

It will thus be seen that the evolution of the orthograde posture was attended by a structural revolution in all those parts which are concerned in setting up a tidal flow of air to the lungs. Ribs, vertebrae, sternum, body wall and spinal muscles, diaphragm, pleurae, lungs, and heart underwent a simultaneous and harmonious adaptational transformation. To account for such a structural revolution we must postulate a much more elaborate mechanism controlling developmental processes than any we have knowledge of as yet. Further, it is evident that the square shoulders, the flat back, the wide chest, the cordiform diaphragm, we are familiar with in man's body, are of ancient origin, having been evolved with the appearance of the earliest of orthograde primates.

REFERENCES.

[1] T. Wingate Todd: *Anat. Anz.*, 1912, vol. 41, p. 337. [2] For data relating to these age changes in shoulders and thorax see Wingate Todd, loc. cit.; C. B. Rodes, *Zeit. f. Morph. u. Anthrop.*, 1905, vol. 9, p. 103 (Wintrich's observations are here included); E. Mehnert, *Ueber topographische Alterveränderungen des Atmungsapparates*, Jena, 1901. [3] For fuller details see Keith, *Lancet*, 1903, i, p. 622; 1904, i, p. 559.

The Goulstonian Lectures

ON

THE NATURE OF ARTERIO-SCLEROSIS.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON

BY

GEOFFREY EVANS, M.D.CANTAB., F.R.C.P.LOND.,

ASSISTANT DIRECTOR, MEDICAL UNIT, AND ASSISTANT PHYSICIAN, ST. BARTHOLOMEW'S HOSPITAL.

LECTURE III.—CAUSATION OF DIFFUSE HYPERPLASTIC SCLEROSIS.*

THE description of diffuse hyperplastic sclerosis formed the subject of the first lecture; the process concerned in its production and the opinion that it was one of inflammation was presented in the second; the matter of its causation remains for consideration.

Since diffuse hyperplastic sclerosis has not been produced experimentally only clinical evidence on causation is available, and before this is discussed the clinical signs of diffuse hyperplastic sclerosis need to be established. The clinical diagnosis is nearly always a matter of inference, since there is rarely the opportunity for microscopical examination of a piece of tissue; though the study of retinal vascular disease holds out the prospect of the accurate diagnosis of diffuse hyperplastic sclerosis during life the correlation of ophthalmoscopic findings with histological lesions is not as yet complete. The clinical picture can be established, however, on the basis of the naked-eye *post mortem* indications of the presence of the lesion.

* Abstract of lecture delivered on March 13th.

NAKED-EYE POST-MORTEM EVIDENCE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

The identity of diffuse hyperplastic sclerosis as an affection of the larger vessels has not been established, hence it can only be recognized by microscopical examination of tissues cut fresh or suitably embedded to retain their fat. Its presence is inferred from the appearance of thickening of the smaller arteries, particularly of the kidneys and spleen, and the vessels are seen to protrude like little quills (in the words of Hilton Fagge) on the cut surface of these organs. When there has been a raised blood pressure during life the walls of the larger arteries such as the splenic and iliac arteries are obviously thickened, and the hypertrophied media shows as small transverse ridges on the inner surface of the vessel wall.

Cardiac hypertrophy, especially affecting the left ventricle, when not due to disease of the heart and lungs, is termed "idiopathic hypertrophy" for the sake of present convenience, and it is the most important evidence, though not proof, of diffuse hyperplastic sclerosis. Its significance in this respect has been tested by two lines by inquiry. In the first place, an analysis of twenty consecutive years of medical *post-mortem* records of St. Bartholomew's Hospital[1] showed that idiopathic cardiac hypertrophy of more than 15 oz. weight was significant of cardio-vasculo-renal disease. Thus the records of the great majority of cases with idiopathic hypertrophy showed death due to cerebral haemorrhage, heart failure, or uraemia; or when death was due to other cause the records made reference to arterio-sclerosis or some form of renal sclerosis. The few exceptions included a small group of cases of pernicious anaemia (Cabot has also called attention to cardiac hypertrophy in this disease), a few cases of alcoholism,[2] and obese heart. In the second place, I have found diffuse hyperplastic sclerosis in all cases of idiopathic hypertrophy that I have examined microscopically. The hypertrophy of the heart and media of the arteries is to be regarded as a compensatory phenomenon, physiological expressions of increased activity during life. The only essentially pathological sign of diffuse hyperplastic sclerosis is renal sclerosis in one of its several forms—a matter that will be referred to later. In short, the essential *post-mortem* picture of diffuse hyperplastic sclerosis is limited to the cardio-vasculo-renal system; it consists of left ventricle hypertrophy, the appearance of medial thickening, and renal sclerosis. This picture is often dominated by one of the complications or sequelae of vascular disease, such as cerebral haemorrhage, thrombosis, heart failure, or septicaemia; it may also be one aspect of a coincident condition, such as nephritis when death is due to uraemia, and it is often overlooked when death is due to an intercurrent disease such as pneumonia or cancer.

CLINICAL PICTURE OF DIFFUSE HYPERPLASTIC SCLEROSIS.

Post-mortem evidence establishes the clinical diagnosis of diffuse hyperplastic sclerosis on idiopathic cardiac hypertrophy and renal sclerosis. The clinical diagnosis of the former is not without difficulty, since heart disease, particularly myocardial disease, is often difficult to exclude. From a comparison of blood pressures taken during life and heart weight determined after death a close relation has been established between raised systolic pressure and idiopathic hypertrophy. The direct relation shown in my first paper on arterio-sclerosis[1] has not been borne out by a series of 32 cases collected since. The two series are not, however, directly comparable, since the second series was merely compiled from clinical notes and *post-mortem* records. Other factors than mere increase in blood pressure are concerned in determining the degree of cardiac hypertrophy. Of the 32 cases of idiopathic hypertrophy that form my second series (heart weight more than 15 oz.) the systolic blood pressure during life was 180 mm. Hg or over in 84 per cent., and was 170 mm. Hg or over in 94 per cent. These cases furnish further evidence of the association of raised blood pressure and idiopathic hypertrophy, which is already generally accepted. In choosing an arbitrary figure of systolic pressure as having a pathological significance it is very necessary to take a conservative line, since the blood pressure is liable to considerable variation in health,[3] and in conditions of fatigue, excitement, pain, dyspnoea, and the like, but my experience has been that the systolic pressure does not reach 180 mm. Hg under such conditions; and having regard to the relation of diffuse hyperplastic sclerosis on the one hand, and of a systolic blood pressure of 180 mm. Hg to idopathic

cardiac hypertrophy on the other hand, I believe that a systolic pressure of this level is definite clinical evidence of diffuse hyperplastic sclerosis, provided always that the reading is taken under good conditions. In outline my view is that the clinical signs of diffuse hyperplastic sclerosis are idiopathic cardiac hypertrophy (standard being 15 oz. weight *post mortem*) and a raised systolic pressure (180 mm. Hg). There is no need to complete the clinical picture, and I will pass on to consider the various diseases in which these two signs are present.

1. *Hyperpiesia.*

Sir Clifford Allbutt[4] introduced this term to define a group of cases of which the outstanding features are a persistently raised blood pressure with cardiac hypertrophy but without kidney disease; thus far the description applies to a clinical condition, but Sir Clifford Allbutt uses the term to define not merely a condition but a disease—one that may respond to treatment and recover, or alternatively pursue its own course and terminate in death. In this latter event it preserves its identity as a morbid series that does not pass through or into Bright's disease; it is marked by the absence of such classical signs as an earthy complexion, a pronounced secondary anaemia, and also by the condition of the urine, which, though it may contain a few hyaline or granular casts or a small quantity of albumin, does not in hyperpiesia become pale in colour or low in its specific gravity; neither does it contain red blood cells or epithelial casts, unless it is complicated by marked venous congestion as a result of heart failure. In view of the relation of cardiac hypertrophy and raised blood pressure to diffuse hyperplastic sclerosis, and since these are the cardinal signs of hyperpiesia, I maintain that the clinical expression of diffuse hyperplastic sclerosis is hyperpiesia.

The connexion between hyperpiesia and its vascular lesion is so close that it is commonly regarded as one of cause and effect. The older view that the vascular lesion is responsible for the hypertension is no longer tenable.[4] The present opinion is that hypertension is the cause of arterio-sclerosis, an opinion that is expressed by Sir Clifford Allbutt in his distinction of a hyperpietic form of arterio-sclerosis. This opinion has received support from the work of Jores, reinforced by his interpretation of his histological findings (Lecture II). It is also supported by the record of cases of hypertension without demonstrable vascular lesions after death[4 5 6 7]; again, the clinical fact that hyperpiesia is a recoverable disease, balanced against the opinion that arterio-sclerosis is a permanent pathological change, a final event from which recovery cannot occur, is urged in the same sense; and lastly, there is the circumstance that blood pressure measurements are taken during life and vascular lesions are studied later after death. Such evidence as this does not bear critical examination. It is not certain that diffuse hyperplastic sclerosis is a permanent pathological change, or if it is the body may be able to so adjust itself that the patient recovers from hyperpiesia though his arterio-sclerosis persists. Further, to establish a sequence in time between the development of hypertension and diffuse hyperplastic sclerosis does not establish the relation of cause and effect since both may result from the action of a common cause, and the difference in time of their development may depend on the longer time required for the development of a structural lesion as compared with a functional lesion.

Hyperpiesia may be dependent upon a disturbance of vascular function due to the activity of a pressor substance in the sense postulated by Dr. Batty Shaw,[8] and Krogh's work[9 10] on capillariomotor activity throws a new light on the mechanism set in motion at this stage of the disease. A similar problem is present in Raynaud's disease when vaso-constriction is so persistent and severe that gangrene of a distal part results without the occurrence (according to Leo Buerger) of a demonstrable vascular lesion; but in the only case of Raynaud's disease that I have examined there was an extreme degree of arterio-sclerosis in the digital arteries of a finger that had to be amputated for gangrene.

While there is no adequate clinical evidence for the opinion that mechanical strain is a cause of diffuse hyperplastic sclerosis, pathological evidence is contrary to such a view. Jores's views on the subject fall to the ground with the failure of his distinction between regenerative and hyperplastic layers in the thickened intima of diffuse hyperplastic sclerosis. The actual lesion in the arterioles, the endothelial cell proliferation and subsequent fatty degeneration, is not open to explanation in terms of increased blood pressure. Fatty degeneration is an expression of deficient oxidation, and a mechanical strain that shows itself in this weakening of the vessel wall can hardly be responsible at the same time for the increased tissue activity shown by proliferation of the endothelial cells of the perfect form and staining seen in these vessels. Mechanical strain fails equally as a working hypothesis in regard to the distribution of the lesion, for it does not explain the relative incidence of the lesion on the several organs of the body; it is no explanation of its major incidence on the kidneys and spleen, its common presence in the brain, pancreas, liver, and suprarenals, its relative rarity in other organs, and its absence from skeletal muscles and heart. The theory of increased blood pressure fails to account for the development of diffuse hyperplastic sclerosis, and it is concluded from the evidence at present available that the cause of diffuse hyperplastic sclerosis is the same as that of hyperpiesia.

2. *Renal Sclerosis.*

There is some degree of renal sclerosis in all cases of diffuse hyperplastic sclerosis, and there is some vascular lesion in all cases of renal sclerosis. Apart from polycystic kidneys, tuberculous and obviously syphilitic kidneys, calculous and other forms of pyelonephritis, renal sclerosis is divisible into two main groups according to the distribution of the lesion in the organ.

Group 1: Chronic Nephritis.—The lesion is diffuse; though not uniform it is widely distributed throughout the organ. The essential lesion is a glomerulitis, shown by proliferation of the cells of Bowman's capsule, or at a later stage by adhesion of the parietal and visceral layers of the capsule. The constant lesion, as in all forms of renal sclerosis, is an increase of fibrous connective tissue. Taken as a whole, and in their more chronic forms, these kidneys tend to be associated with diffuse hyperplastic sclerosis and cardiac hypertrophy. The association of diffuse hyperplastic sclerosis with chronic nephritis is best illustrated by its occurrence in children, of which I have recently published four cases in detail[11]; from another point of view it is illustrated by statistical evidence of cardiac hypertrophy in its relation to kidney disease (see Ref. 1, p. 248). The lesion in chronic nephritis is without doubt inflammatory, and its association with diffuse hyperplastic sclerosis has been brought forward as further evidence in favour of the inflammatory nature of the vascular lesion. The vascular lesion may develop to an extreme degree, so that the parent arteries are almost completely obliterated; in other cases of extreme renal disease the vascular lesion may be relatively slight and limited to the kidneys. Clinically there may be a history of acute nephritis or of oedema of the renal type. The symptoms of which the patient complains are those commonly regarded as uraemic, of which the more important are headache, gastro-intestinal disturbance, and disturbance of vision due to albuminuric retinitis. In well marked cases there is pallor of the face; in severe cases a muddy complexion and secondary anaemia; the urine contains red and white blood corpuscles and cell casts, and at a later stage it is pale in colour and of low specific gravity. Sometimes there are no cells or casts in the urine. Puffiness of the face is common; cardiac oedema is more frequent than renal oedema. Hypertension and cardiac hypertrophy are characteristic but not essential features of the clinical picture.

My interpretation of the association of diffuse hyperplastic sclerosis and chronic nephritis is that both lesions are provoked by the same cause or causes, and the solution of the etiology of chronic nephritis will solve the etiology of diffuse hyperplastic sclerosis (see also Ophüls, loc. cit., p. 95). This view has lately received support from the study of the histology of war nephritis in the early stages of the disease. Herxheimer[12] has recorded that the earliest lesion is of the endothelial cells of the glomerular tufts; initially it is limited to occasional loops of occasional glomeruli; soon the whole or the greater part of the tuft is affected and the great majority of all glomeruli are involved. Inflammatory reaction in the cells of Bowman's capsule, the typical lesion in nephritis, is a subsequent event.

Group 2 includes all kidneys in which the lesion is partial, being limited to wedge-shaped areas with their base on the surface and their apex pointing to the cortico-medullary zone. These areas correspond to depressions on the surface of the organ: when they are small the surface is almost smooth (as in the hyperpietic kidney); when they are large and deep the surface is coarsely granular (as in true chronic interstitial nephritis). The areas consist of fibrous tissue, damaged renal parenchyma, and more or less small cell infiltration. The

intervening tissue is relatively normal and the parenchyma may be hypertrophied. On account of the presence of normal tissue these kidneys retain their colour (which depends largely on their capillary blood content), in contrast to the kidneys of chronic nephritis in which the lesion is diffuse and the colour pale.

Subgroup (a): True Chronic Interstitial Nephritis.—Histologically there is evidence of active inflammation in the presence of glomerulitis, similar to that seen in chronic nephritis, and small cell infiltration out of proportion to the degree of glomerular tuft damage. The differential diagnosis of these cases clinically from chronic nephritis may be impossible. As a general rule they occur after the age of 35, whereas chronic nephritis is commoner before 35. The most obvious aspect of the clinical picture is cardio-vascular disease, the symptoms being those of heart failure, or simulating hyperpiesia, or sometimes they are purely vascular, as in gangrene of the toes. The renal aspect of the case, in its symptoms, facies, or urinary findings, is a less prominent feature than the cardio-vascular aspect, but to the extent that it is present it is of the same kind as in chronic nephritis. The changes in the fundus oculi are those of arterio-sclerotic retinitis,[13] in contrast to albuminuric retinitis in chronic nephritis. The most marked cases of diffuse hyperplastic sclerosis are found in this subgroup, and they are associated with the highest systolic blood pressures. These cases with their definitely inflammatory renal lesion are further evidence of the inflammatory nature of diffuse hyperplastic sclerosis and point to a common etiology of it and chronic interstitial nephritis.

Subgroup (b): True Arterio-sclerotic Kidneys.—This subgroup is further subdivided into two types, according to whether the accompanying vascular lesion is of the type of diffuse hyperplastic sclerosis or senile arterio-sclerosis.[1] This classification, which I suggested in 1921, seems to hold good in the light of material examined since, and has been recently followed by Professor Shaw Dunn.[14] Chronic nephritis and chronic interstitial nephritis can be similarly subdivided according to the type of the vascular lesion present, but it is not necessary for the present purpose. The essential histological feature of the kidneys in Subgroup (*b*) is the absence of definite signs of inflammation, apart from the vascular lesion, in these kidneys; the glomeruli undergo hyaline degeneration and fibrosis; there is no proliferation of Bowman's capsule; there is little small cell infiltration, and the degree of small cell infiltration bears some relation to the degree of glomerular tuft damage. Clinically these cases have no renal aspect, and do not suggest the picture of Bright's disease in any of its well recognized forms. The renal lesion is only evident in a trace of albumin in the urine; the urine is of good colour and normal specific gravity. Of the two types included in this subgroup the one in which there is diffuse hyperplastic sclerosis is the more important, for it is associated with raised blood pressure and cardiac hypertrophy, and is hyperpiesia. Microscopically the kidneys are relatively normal in appearance, their surface is smooth, or very finely granular, or they may be marked by scars like old infarcts. On section they are a little firmer than normal, and the vessels are unduly prominent. I suggest the name "hyperpietic kidney" for this type of renal sclerosis, and its significance in respect to the etiology of diffuse hyperplastic sclerosis has been already discussed under hyperpiesia.

This slight review of the relation of nephritis and renal sclerosis to diffuse hyperplastic sclerosis is sufficient to establish the intimate relation of the two conditions. It emphasizes the paramount importance of vascular lesions in renal disease, and it is this association that will, I think, ultimately lead to the solution of the causation of arterio-sclerosis. It is possible to assume, as have Aschoff, Gaskell, and others, that the vascular lesion is the cause of the renal lesion in my second group of renal sclerosis—the arterio-sclerotic group—a point of view that involves Gull and Sutton's conception of diffuse hyperplastic sclerosis as an independent disease of the vascular system. I hesitate to accept this view, because it cannot hold good for the relation of diffuse hyperplastic sclerosis to chronic nephritis and chronic interstitial nephritis. It is possible that the inflammatory changes in the latter are due to secondary infection, as has been suggested by Volhard and Fahr,[15] a suggestion which is as difficult to prove as it is to refute. There is less objection to the view that the vascular disease is primary and the renal lesion a secondary atrophy in the hyperpietic and senile forms of arterio-sclerotic kidneys—Subgroup (*b*). At the same time this gives the vasculature an identity of its own, whereas it is better regarded as merely part of the cardio-vasculo-renal system.

The basic proposition that I have attempted to present in this outline of the relation of hyperpiesia and renal sclerosis to diffuse hyperplastic sclerosis is that the causation of the vascular lesion is the same as the causation of hyperpiesia and renal sclerosis. The etiology of this condition, so far as it is known at present, is due to the action of bacterial toxins, and both the character of the vascular lesion in diffuse hyperplastic sclerosis and the distribution of the lesion in the vascular tree is compatible with the view that it is caused by a circulating toxin. Thus, with regard to the former, the character of the lesion is inflammatory; and with regard to the latter, it is known clinically from the distribution of amyloid disease and experimentally from the work of Welch and Flexner[16] and others, that a circulating bacterial toxin can readily cause both an unequal and a focal lesion of arterial walls.

THE RELATION OF OTHER FORMS OF ARTERIO-SCLEROSIS TO DIFFUSE HYPERPLASTIC SCLEROSIS.

1. *Nodular Sclerosis.*

This lesion is like diffuse hyperplastic sclerosis in that the initial change is in the intima and in that the early stages show an intimal thickening due to proliferation of superficial cells, which Klotz[17] regards as either of endothelial or connective tissue origin. The intimal thickening is permeated by elastic fibrils at a later stage, and fatty degeneration occurs subsequently, perhaps as a result of deprivation of oxygen. Klotz and Manning[18] have made a minute study of the fatty streaks and spots that are chiefly found in the aorta and in the main vessels arising from it. They are of the opinion that these lesions may develop into nodular sclerosis and atheroma, an opinion shared by Jores and others; they say of these lesions that

> "there is every indication that the production of tissue in the intima is the result of a direct irritation of that tissue by the presence of infection or toxins or of the stimulation by the products of a primary degeneration in that layer."

There is considerable evidence in favour of the view that these lesions, as well as those which are doubtless nodular sclerosis, are due to the effect of bacterial toxins. Klotz suggests that they are of an inflammatory nature, and he controverts Thoma's theory that the intimal thickening is compensatory to medial degeneration. From the information at present available it would seem that nodular sclerosis, in the nature of its lesion and in the site of its earliest appearance in the vessel wall, resembles diffuse hyperplastic sclerosis, while in other circumstances Thoma's theory may hold good—that it is a compensatory thickening secondary to an initial weakening of the media.

2. *Senile Arterio-sclerosis.*

This form of arterio-sclerosis is primarily a medial degeneration, beginning with fatty degeneration and atrophy of the muscle fibres, and affecting the larger and smaller vessels.[19] Secondary to these changes occur replacement fibrosis and deposit of lime salts in the media. It is commonly accompanied by thickening of the intima, and nodular arterio-sclerosis is generally present in some degree. It differs from diffuse hyperplastic sclerosis in its clinical expression; age is more definitely a factor in its causation, and it is not accompanied by the cardiac hypertrophy and raised blood pressure of diffuse hyperplastic sclerosis.

Senile arterio-sclerosis is as diffuse in its distribution as diffuse hyperplastic sclerosis, but it differs from it both in respect of the site of the earliest lesion and in the character of this lesion. It is possible, therefore, that its causation is different; vascular lesions that have been produced experimentally, such as those caused by repeated adrenaline injections,[20] also by experiments (Klotz) in which arterio-sclerosis of the aorta was produced in rabbits by suspending them by their hind legs for two or three minutes daily for many days in succession, are of the nature of medial degeneration with calcification. Again, clinical conditions, such as mitral stenosis, that lead to an increased pressure in the pulmonary circulation sometimes (though not always) lead to arterio-sclerosis of the pulmonary artery in which degenerative changes are the prominent feature.

There is both clinical and experimental evidence, therefore, that mechanical and toxic causes may be responsible for senile arterio-sclerosis. Thorel's[21] opinion on the mechanical causation of arterio-sclerosis expresses as well as any other

the generally accepted view. After reviewing the conditions in which an increased blood pressure is generally regarded as responsible for the vascular lesion, he remarks that "the factor of increased content of metabolites in the blood is also involved," and he expresses the opinion that an increased blood pressure cannot be excluded from the etiology of arterio-sclerosis, and that "it is without doubt an accessory factor in the production of arterio-sclerosis provoked by other causes." For a full discussion of this subject reference should be made to Allbutt, Andrewes, Thorel, MacCallum, and Moschcowitz.

Whether, however, a degenerative or proliferative lesion results from the action of a toxin on the vessel wall, may depend on the one hand on the nature of the pathogenic agent. On the other hand, the power of resistance of vascular tissues to the pathogenic agent must be an important determining factor, and it is possible that whether diffuse hyperplastic sclerosis or senile arterio-sclerosis result depends rather on the vitality of the tissues affected than on the nature of the pathogenic agent. There is some evidence in favour of this view, and factors such as age and inheritance find their due place in the tangle of causation in the extent to which they undermine and modify the reaction of vascular tissues to insult. Thus there is no reason to believe that age in itself is the cause of arterio-sclerosis, and Ophüls[22] has shown that the curve of incidence of arterio-sclerosis does not correspond with what would be expected if the lesion were the direct result of it and of the senile deterioration associated with it.

3. *Mönckeberg's Sclerosis.*

Mönckeberg's sclerosis illustrates this aspect of the problem from another point of view. The form of sclerosis that he describes is often included in the senile form of arterio-sclerosis; it does indeed often occur in old age, and it is like senile arterio-sclerosis in the fact that it is apparently a primary affection of the media and is characterized by calcification. In a sense it is more senile than senile arterio-sclerosis, for the intima often fails to proliferate, and when it occurs it is often late in the evolution of the lesion as a tardy process of repair. But it is not age that has weakened the vessel walls and prevented their reaction to insult—it is disease, not local but general; thus of the 12 pure cases described in Mönckeberg's original paper,[23] 4 died of cancer, 4 died of phthisis, 1 of advanced morbus cordis, and 3 of cachexia due to chronic infection. I think it is here that diabetes mellitus sometimes finds its place in the etiology of arterio-sclerosis.

SUMMARY.

The study of the pathology of arterio-sclerosis has impressed me with the vivid picture of reaction in tissues to insult, response to injury, and repair of damage done. Great students of pathology such as Virchow interpreted the lesion in terms of inflammation, Thoma in terms of involution, and Jores in terms of growth. These men, at least, have failed to grasp the cloven hoof of decadence and decay. It is asking too much to expect a *restitutio ad integrum* in arterio-sclerosis, and, as in tuberculosis of the lung, we may well be content with a lesion that heals by calcification and fibrosis. The prospect of recovery in vascular tissue is indeed better than it is in the parenchyma of the lung; new vessels are formed more easily than new parenchyma. Louis Gross[24] has demonstrated the formation of new vessels in the kidney of renal sclerosis, and the rapidity of their formation is strikingly illustrated in thrombo-angeitis obliterans, where new vessels may be formed in the lumen of the affected artery before the original process of disease has subsided, so that the new vessels may themselves be affected by the original process of disease. Again, it is remarkable evidence of the healing power of vessels that aneurysm of the aorta is rarely due to arterio-sclerosis even when present in a severe degree. There is a big field for inquiry in clinical medicine where evidence of the healing of arterio-sclerosis may be collected, and yet before the gate into this field is opened the clinical diagnosis of arterio-sclerosis needs a closer approach.

As the problem of arterio-sclerosis is contained in its definition, I will end by stating the problem as I have tried to outline it:

Arterio-sclerosis is a lesion characterized by a pathological thickening of arterial coats, particularly of the intima; inflammatory reaction is of first importance; degenerative changes are an essential part of the picture; hyperplastic and involutionary processes play a part; no unit factor is responsible for its causation. Its development in its extent and form depends on a balance between the action of toxic agents and the power of resistance of the vessel wall to their attack.

In conclusion, it is a real pleasure to acknowledge the help and advice that I have received from Sir Frederick Andrewes, and the constant assistance kindly given by Sir Bernard Spilsbury.

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ON ANKYLOSTOME INFESTATION:

THE CHANGING PROBLEM.

BY

CLAYTON LANE, M.D., LIEUT.-COL. I.M.S.(RET.).

THE present time seems particularly opportune to call attention to certain aspects of the hookworm problem which threaten to cause a division of opinion and procedure among those whose common desire is its solution.

It is probably undisputed that the aggregate of ankylostome infestation is enormous, hundreds of millions of persons being infested, that the effects of comparatively light infestations are harmful, and that an active hookworm campaign is essential. Beyond this point opinion is imperfectly crystallized. There is, for example, a weighty body which holds that the problem of ankylostomiasis is so great that it must be attacked along lines admittedly unscientific and deliberately rule of thumb. Their case is a reasoned one and can be put, I think quite fairly, thus:

1. The microscope fails to detect with certainty light hookworm infestations; so that, relying upon it, the sanitarian, intent upon producing complete disinfestation, will find nothing but disappointment.[1]

2. The light infestations, those with less than ten worms, missed by the microscope, do not, however, damage their host; so that the fact that the microscope misses such infestations is actually an advantage.[2]

3. Accordingly the right way to attack the hookworm problem in any locality where infestation is shown to be considerable is to treat all persons indiscriminately, without attempt at individual diagnosis, with two treatments of oil of chenopodium.[3]

4. In this way 93 to 97 per cent. of the worms will be removed and all infestation material to the host will be eliminated.[1 3]

5. At the same time the soil will cease to be seriously infected, and reinfection of man will remain at the point where the resulting human infection will be immaterial.[3]

6. So that, in view of the inadequacy of microscopic diagnosis, and the practical adequacy of treatment, it is the duty of the sanitarian, faced with this huge problem, to concentrate upon the heavy cases which matter and disregard the light ones which do not.

Microscopic Detection of Ova.

Whether infestation be light or heavy, the microscopic detection of ova in the stool is manifestly impossible if the worms be not ovipositing—that is to say, if only males be present, or if the females be too young, too old, or too ill to lay. If ova be present in the stool can they infallibly be detected there by the microscope, or is it the case, as stated in the fifth annual report of the Rockefeller Foundation, International Health Board, that microscopic technique fails to detect 50 per cent. of light infestations? The answer to this lies in some sixteen months' work of mine, financed first by the International Health Board and later by the Royal Society.[4] This work starts from the admitted position that hookworm eggs may be so sparse in a stool that the West Indian technique is fully justified. This requires that before a negative diagnosis is made nine faecal smears on 3 × 2 in.

slides, three simple and six from the deposit after centrifuging, should be examined. To save the enormous expenditure of time involved, a number of concentrative methods have been produced, designed to separate ova from faeces proper and to concentrate the former on a small area for microscopic examination. Since this work has involved the counting of over a quarter of a million hookworm eggs it rests on a foundation more solid than hitherto attempted. Since it has involved the eviction of the writer's own levitation technique from the premier position which he believed it to hold, the conclusions may reasonably be accepted as unbiased. Briefly the procedure has been as follows:

The Standardizing Count.

A measured quantity of stool is, by prolonged shaking with a comminutor, disintegrated into its constituent parts; it is clear that so long as faeces remain adherent to ova the ova cannot be collected apart from faeces proper. With a pipette this even faecal suspension is allocated into as many centrifuge tubes as there were cubic centimetres of original faeces. These tubes are now centrifuged for such time and at such rates as will, for the centrifuge in use, throw down all the suspended ova. In a centrifuge in which the bottom of the tube is 6¾ inches from the centre this will be accomplished in sixty seconds at 1,000 revolutions a minute. The supernatant fluid is decanted. The deposit in each tube, all containing on the average the same number of eggs, is treated by a different concentrative technique and the ova recovered are counted. One tube is retained as a control, in order that a count may be made of the number of eggs with which each technique started. But since to make this count in smears in the centrifugal deposit from 1 c.cm. of stool spread sufficiently thinly would occupy several hours, the eggs in a measured fraction only of the control are counted, with due precautions for the maintenance of an even suspension, and for its accurate subdivision. This number, multiplied by the fraction, gives the average ovum content per cubic centimetre.

This controlling count I have named the "standardizing count." Subjected for the first time to this rigid mathematical control, it is evident that each technique has what may be termed its "limit of effective concentration," which is to say that it will, without appreciable loss, concentrate upon a certain examination area the ova from a certain quantity of a given stool, but that if, other things being unchanged, the quantity of stool be increased or the examination area be diminished, there occurs a loss of ova, at first relative and then absolute. Methods giving on occasions brilliant results have in the past been summarily rejected because on others they have miserably failed. That failure has been due almost solely, as I believe the internal evidence demonstrates, to their having been put to do that which was quite beyond their capacity, there having been no realization—as indeed there could not be without standardization—that the limit of effective concentration was the rigidly controlling factor which these counts show it to be.

The limit of effective concentration for levitation is, at the utmost, 0.5 c.cm. of stool upon 2 sq. in. of slide, and takes from twenty to thirty minutes for complete examination. In the Kofoid and Barber and in the Willis gravity flotation methods, modified in accordance with the ascertained limit of effective concentration, it is 1 c.cm. of stool upon 1 to 2 sq. in. of slide, taking ten to twenty minutes for complete examination. In the new centrifugal flotation method it is 1 c.cm. of stool upon a sixth of a square inch of slide, taking about two minutes for complete examination, while the control counts show that the number of ova lost during concentration by this technique is negligible. Moreover, the process of concentration is so simple that the ordinary unlettered coolie would have no difficulty in carrying out the whole of it. It seems, then, to fulfil the essentials for mass diagnosis and to combine rapidity, certainty, foolproofness, and cheapness to a degree not hitherto approached by any other technique.

This being so, does the 1 c.cm. of stool, which this technique uses, suffice for the detection of light infections? Baermann's work[5] indicates that each ankylostome female lays daily at least 1,000 eggs, or 10 ova per c.cm. in a stool of 100 grams. Darling's corresponding figures[3] for each female are an average of 2,237 ova daily, with maximum and minimum figures of 7,454 and 427.

The evidence, then, is that the properly conducted examination of 1 c.cm. of stool by direct centrifugal flotation will certainly, rapidly, and cheaply detect infestations by a single, normally ovipositing, female ankylostome. In other words, the microscope, properly used, can be relied upon to detect the lightest infections, and the statement that it misses 50 per cent. of light infections is incorrect.

There remains, under the second heading, the question whether infections with less than ten worms do not damage their host. Evidence on this point is apparently lacking. It seems to be felt as inconceivable that a single pair of ankylostomes should harm their host, and this feeling is expressed, quite unjustifiably, as a direct negation. The position assumed is unsatisfying. It is that the microscope cannot detect less than ten hookworms, and that by an extraordinary coincidence it is just that number which matters. As has been pointed out,[6] a similar attitude has been adopted, quite incorrectly, regarding the centrifuge, and those who now make this statement must surely feel under an obligation to substantiate or reject it.

It is at least certain that there is a growing mass of evidence that the so-called carrier is improved in health and working power by disinfestation, and I know of no published evidence suggesting that there is any limit below which infestation is immaterial. Statements of personal belief on this matter appear misplaced. The fact seems to be that there is no satisfactory evidence either for or against the belief that the lightest infestations are immaterial to their host. With the definiteness in diagnosis which these new methods imply a few months' accurate examination in the field should suffice to settle this point and bring certainty where divergence of opinion is now expressed.

Are we justified in treating cases indiscriminately without diagnosis? In treatment we aim at employing poisons of such a nature and in such a manner that we poison all hookworms without poisoning the host. We are only exceptionally successful in accomplishing the former, and do not always succeed in avoiding the latter. Every established line of treatment has deaths to its discredit, so that every medical administrator who authorizes the administration of a potentially poisonous drug to individuals without any knowledge as to whether individually they are or are not infested must satisfy his own conscience on the matter. But if he satisfy himself that it is ethically permissible there remains the question, Is it politic for the campaign in question? Should a death occur after anthelmintic treatment as, with ankylostome treatment going on upon the scale necessary, must happen whether the drug had or had not any hand in its causation, unquestionably certain persons will say, "You have poisoned this man, and you did not even know that he was infected."

There are yet other moral questions involved. Just as every hookworm campaign uses and benefits from advances in scientific knowledge gained by previous ones, so is there surely an obligation, for the benefit of others, to add to that common stock of knowledge. It seems almost impossible to do so if diagnosis is to be dispensed with and treatment is to be merely by rule of thumb.

Regarding oil of chenopodium, it is true that in certain instances certain specimens have in *two* treatments removed 93 to 97 per cent. of the number of worms which *three* treatments evacuated. There is no evidence, and indeed with the methods of diagnosis hitherto employed there could be no evidence, that 93 to 97 per cent. of *all* the ankylostomes originally harboured were thus removed. With knowledge of the futility of these methods it is, indeed, gravely illogical to make this assumption. Moreover, oil of chenopodium is no fixed chemical compound and has no pharmaceutical standard. The work of Caius and Mhaskar[7] shows that its chemical composition varies, while as regards its anthelmintic value it must not be overlooked that in the Rockefeller Foundation's Panama campaign the drug was rejected as useless. It is, then, as premature to state that two treatments with oil of chenopodium will evacuate 93 to 97 per cent. of all worms as that these treatments will remove all infestation which matters to the host.

Ankylostomiasis a Privy Infection.

The present conception of ankylostome infestation is that the larvae are widely disseminated in the soil; and that those who work barefooted on the soil, especially agriculturists, are particularly liable to it. Ankylostomiasis has, indeed, been definitely and unhesitatingly designated as an occupational disease. But let us consider the latest evidence. According to the experiments of Augustine[8] there is practically no lateral migration of larvae in the soil. A circle four inches in radius round an infected spot marks, it is said, the extreme limits of larval excursion. Unless these experiments be disproved ankylostomiasis must be accepted as a stringently localized ground infection, something which I would designate as a *privy infection*, using the term "privy" to include (1) a man-made latrine; (2) what Cort and Payne[9] term a "natural

latrine," a selected and probably sequestered spot to which an individual will constantly return; (3) what may be designated a "casual privy," any spot whose use the call of the moment necessitates. Accepting these experiments it is impossible to admit that hookworm infection is a general infection of the soil, one which tends to evenness of diffusion; nor can one admit that it is of such a nature that the agriculturist must necessarily meet wandering larvae in the course of his work. Were this so, however, we could agree with those who clearly look upon the soil as one uniform whole more or less uniformly infected, and maintain that the amount of soil infection generally, and the consequent risk to those who work on it, must be proportionate to the number of ova which fall upon it—that is, to the number of ankylostomes harboured by the inhabitants. On such grounds, too, one would have to agree with Darling[3] that, could one reduce the number of ankylostomes to a certain level, one would reduce the larvae they breed to a point where human infection would be slight, and, if one be willing to concede this without proof, negligible; and that no increase in the infection rate of a community could occur without importation of a heavier infection from outside.

But, on the contrary, the evidence of Augustine's experiments is that infection must be constantly, presumably preponderatingly, a "privy" infection, and that in the case of man-made latrines and "natural latrines" it is what I have termed a dejectional infection[10]—obtained, that is, at the time of defaecation. Only in case of his skin coming into contact with ground which has been used as a casual privy will an individual acquire what I have termed a casual infection[10]; and that will generally be but seldom.

If, then, one conclude—and it is difficult to escape doing so—that recent evidence points to hookworm infection as being under ordinary conditions practically always a privy infection, and preponderatingly a dejectional infection, one is confronted with this question: Does the man-made latrine, as recommended by the sanitarian, prevent infection; or does it actively disseminate it? There will scarcely be opposition to the statement that ankylostome infestation cannot occur from a clean sewered water-closet, whence the infected stool is at once removed. But in those widely used, because widely recommended, latrines where the stools are dealt with *in situ* with a view to larval destruction, the position is unsatisfactory and disquieting. McVail[11] has found that ova and larvae, identified as those of hookworms, are constantly present in the effluent of those fine septic tanks which stand on the banks of the Hugli; Minett[12] and Khalil[13] have found them similarly in the West Indies; Khalil[14] quotes experiments to show that these larvae can swim; Payne[15] has shown that even if larvae do not migrate laterally on the surface of the ground, they can mount vertically through at least 36 inches of soil. Accordingly any latrine which permits of direct or indirect pollution of the soil or subsoil is, under present conditions, unsafe.

Since, apart from sewered latrines, there are such grave reasons for suspecting all man-made latrines as disseminators of hookworm infection, it is pertinent to inquire the extent to which a man, conscientiously using his privy and harbouring but a single pair of ankylostomes, will infect that privy. The answer lies in the work of Baermann and of Darling, to which reference has been made above. Assuming for the sake of even numbers that this particular pair of worms produced 2,740 fertile eggs daily, the number deposited in the latrine will be a million a year. We are assured that nine ankylostomes, or four to five million eggs a year, are hygienically negligible. It is not unreasonable to ask of those who are maintaining that this prodigious figure is hygienically negligible that they should either prove it or cease to urge it as a working hypothesis. There is an unfortunate disposition to take sides on this matter, and as one who is credited with leading the opinion that all infection matters[3] I would suggest that it is immaterial what anyone's opinion is, except in so far as it acts as a spur to the collection of facts. What is required is fact, and pending the collection of further facts there seems ample justification for the refusal to accept as personally or hygienically negligible any infection however slight.

The Needs of Hookworm Campaigns.

Seeing, then, that, by the evidence, accurate microscopic diagnosis is a reality; that treatment does not produce effective disinfestation; and that ankylostomiasis must, on our present evidence, be looked upon as, in the main, a privy disease, and not a general soil disease; the case which has been stated, and as I believe fairly stated, above collapses.

The problem is really a somewhat pathetic one. In the face of an urgent situation hookworm campaigns have been pushed forward. Certainly something had to be done; but the results are in certain respects deplorable. Promises have been rashly made which have not been, and could not be, substantiated, because the premisses on which the argument for their validity rested were unsound.

The present position would seem to be fairly stated thus: Diagnosis, thanks largely to the recognition of the principle of the limit of effective concentration, has now been placed in such a position that it will cheaply, certainly, and rapidly detect hookworm infection, provided normal oviposition proceed. Treatment and prevention lag far behind. We need a drug which will disinfest certainly, preferably in one treatment. Why should we rest content to say, as is said, that certain and complete disinfestation is impossible of attainment? The acceptance of defeat in the situation is unthinkable. We need a latrine, simple, cheap, profitable, foolproof, suitable for the poor hut dweller. We have no approach to it, nor are we likely to have so long as there is no active dissatisfaction with, no strenuous striving to better, what we have. We need properly financed research to solve these and like urgent and vital problems in ankylostomiasis. We need research in order to avoid the heavy waste of money which has occurred so strikingly in the past in hookworm campaigns; for most of the work which has been done will have to be done again. Money spent in adequate research will come back multiplied many fold, not only in the capacity for work and earning, but in that measure of health, happiness, and length of life which our national commitments make it incumbent that we should at least offer to those backward races for whom we have made ourselves responsible.

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THE INFLUENCE OF INTESTINAL BACTERIA UPON THE THYROID GLAND.

BY

D. J. HARRIES, M.D., D.Sc., B.S., F.R.C.S.,

SURGEON, CITY LODGE HOSPITAL, CARDIFF; ASSISTANT SURGEON, KING EDWARD VII HOSPITAL, CARDIFF.

SEVERAL years ago Sir Arbuthnot Lane suggested that exophthalmic goitre was produced by the toxins absorbed from the alimentary canal in intestinal stasis, and advocated colectomy as one of the methods of treatment. As a result of several years of study of the diseases of the thyroid gland I have arrived at the conclusion that his suggestion regarding the etiology of the disease was nearer the truth than most people thought at the time. His suggested method of treating the disease has not been widely adopted.

To appreciate the conclusions I have arrived at it is necessary to consider some factors arising out of the metabolism of certain proteins; these factors bear an intimate relation to the causation of diseases of the thyroid gland.

The Normal Digestion of Proteins in the Alimentary Canal.

All proteins are broken down into amino-acids, and, with the exception of gelatin and some protamines, produce aromatic as well as other amino acids. In this article I am concerned only with the amino-acid tryptophane. Normally a certain percentage of this substance is absorbed into the blood and utilized in the metabolism of the body; the remainder is decomposed in the alimentary canal, with the production of indole and skatole. These bodies are absorbed and then converted into indoxyl and skatoxyl potassium sulphates and excreted as such by the kidneys into the urine, where they can be identified and estimated.

The Importance of Tryptophane in Diseases of the Thyroid Gland.

It has recently been shown by Professor Kendall that thyroxin, the active principle of the thyroid gland, is a tri-iodo tri-hydro derivative of tryptophane; the exact chemical formula is a matter of very little importance, as far as this article is concerned. For the time being I am taking for granted the generally accepted idea that exophthalmic goitre is due to the excessive production of thyroxin; that diffuse parenchymatous goitre is an attempt at producing a sufficient amount of thyroxin for the needs of the body by compensatory hypertrophy of the gland; and that in myxoedema there is a failure of the gland to produce the necessary amount of thyroxin. Acting on the assumption that these ideas were somewhere near the truth, I investigated the factors controlling the supply of tryptophane to the thyroid gland, and the variations in the supply in the diseases mentioned above. Theoretically we should find that in exophthalmic goitre the gland is well supplied with tryptophane, that in parenchymatous goitre the supply is inadequate, and that in myxoedema either the supply is very inadequate or else the gland is unable to utilize the supply available. Before proceeding farther it is necessary to have a rough idea of the normal flora of the intestine.

The Normal Flora of the Intestine.

The flora can be divided into two main groups: the fermentative or acid producers, and the putrefactive or indole producers. Normally both groups are represented in the human intestine, but in disease, and experimentally in health, one group assumes undue, and sometimes absolute, predominance over the other. It has been proved that in the lower animals it is possible to change the predominant group in two to three days by making certain alterations in the food taken. In the human being, unfortunately, this is not easily done. Some time ago Dr. Distaso and I carried out a number of experiments on guinea-pigs, and found that the predominance of the indole producers runs parallel with the amount of indoxyl sulphate in the urine. We also found that by the addition of lactose to the diet we could destroy all the putrefactive indole producers in two to three days, and that the disappearance of the indoxyl sulphate from the urine occurred on the same day as the disappearance of the indole producers from the faeces. Within two days of discontinuing the lactose putrefactive organisms reappeared in the faeces and indoxyl sulphate in the urine.

The Application of these Observations to Diseases of the Thyroid Gland.

During the last two years I have been fortunate in having a number of thyroid cases under my care at the City Lodge and King Edward VII Hospitals. The general practitioners of the district have also allowed me to examine several of their private cases.

Normally, in the human subject, the urine contains roughly 0.2 to 0.3 gram of organic sulphates and about 2 grams of inorganic sulphates per litre. The indoxyl sulphate was estimated by converting it into indigo and comparing the depth of the colour with a series of solutions of known strength. The total sulphates and inorganic sulphates were estimated separately by the benzidine method. I examined the urine of all the cases that I saw during the last two years, and I found that, as a rule, the total amount of organic sulphates runs parallel with the amount of indican in the urine. I also found that in all cases of well established exophthalmic goitre there was no indican in the urine. I now consider that the examination of the urine for indican provides a sound guide to the prognosis, as its early disappearance means that the case is certain to get worse. In some very early cases I have been able to give such a prognosis.

If, in spite of medical treatment for two or three months, a particular case is not showing signs of improvement, and the symptoms are sufficiently pronounced to interfere seriously with the patient's health, I remove about half the gland—but only if there is no indican in the urine. The operation has no effect on the intestinal flora, or on the amount of indican in the urine, but the symptoms will be reduced for a few months, and during that period there may be a change in the flora. If there is no reappearance of the indole producers, then the symptoms recur, their severity depending on the activity and the amount of thyroid left. From these observations I concluded that the putrefactive indole producers had been exterminated in all cases of exophthalmic goitre, and that all the tryptophane was absorbed as such, and was therefore available for the production of thyroxin. The change in the flora takes place before the onset of definite exophthalmic symptoms and is responsible for the diminution, and later the disappearance, of the indican from the urine.

In cases of parenchymatous goitre there was no diminution in the amount of indican—in fact, most cases showed a slight increase with 0.4 to 0.5 gram of total organic sulphates per litre, indicating a predominance of the putrefactive indole producers. In these cases a fall in the amount of indican to below the normal is a sign of grave significance; it means that exophthalmic symptoms are likely to supervene—in other words, the indole producers are being replaced by the fermenters.

In one case of myxoedema investigated there was no indican in the urine—a condition suitable for the development of exophthalmic goitre—and the absence of symptoms can be explained by the atrophic condition of the gland found in all cases of myxoedema.

The Intestinal Flora in Exophthalmic and Parenchymatous Goitre.

Dr. W. Parry Morgan has kindly examined the faeces of some of my cases, and his results have been exactly what I expected from my analysis of the urine and the results obtained experimentally in lower animals by Dr. Distaso and myself. In other words, the indole producers are absent in exophthalmic and present in parenchymatous goitre.

It is well known that women often develop parenchymatous goitre in the hill stations of India, and McCarrison has shown that this is due to the contamination of the drinking water by a coliform type of bacillus, an indole producer, which is what one would expect. It is possible that the altitude has something to do with the rapidity with which the indole producers obtain predominance, as it has a definite influence on the rate of growth of various bacteria.

Methods of Altering the Character of the Intestinal Flora.

Distaso showed that, in rats and guinea-pigs, the addition of lactose to the diet for two or three days suppresses the growth of the putrefactive group. Torrey showed that dogs behaved in much the same way, and that dextrin acts more powerfully than lactose; also that unboiled milk and animal proteins stimulate the growth of putrefactive organisms, while boiled milk and vegetable proteins tend to suppress them. Distaso found that, in the healthy human being, lactose, given by the mouth, produces very little effect on the indole producers, and this explains the absence of any change in the amount of indican found in the urine.

TREATMENT OF EXOPHTHALMIC AND PARENCHYMATOUS GOITRE.

It is unnecessary to discuss the treatment of myxoedema as this is now familiar. The fact that the administration of thyroid extract has to be continued as long as the patient lives shows that the thyroid gland never recovers once myxoedema is established, and the absence of indole producers from the intestine shows that the disease is not caused by an undue destruction of tryptophane, but by the inability of the thyroid to utilize the material at its disposal.

In parenchymatous goitre it is necessary to encourage the growth of the fermentative group by cutting down animal proteins and giving fats, vegetable proteins, boiled milk, rice, bread, and dextrin or lactose. The amount of lactose required to produce any appreciable effect is considerable—1/4 to 1/2 lb. a day—and therefore not within the realms of practical treatment.

In exophthalmic goitre unboiled milk, eggs, and fish should be given freely. The supply of meat protein should be controlled by the symptoms and the examination of the urine. In the complete absence of indican, and therefore of putrefactive organisms, the administration of meat aggravates the symptoms, but in the presence of indican meat will encourage the growth of the putrefactive bacteria already present. I have found that in the complete absence of indican the patient is more comfortable if all animal protein is withheld, and jelly given instead. The reason is obvious, as jelly contains no aromatic radical. In serious cases, with pulse rates of 150 or over, I have found this fact of great value. It is rare for the pulse rate not to fall below 120 if animal protein is withheld for a fortnight; in addition, the patient feels better, and the dangers of an anaesthetic will be reduced if the goitre has to be treated surgically.

Operative Treatment of Goitre.

Obviously, a case of parenchymatous goitre with no exophthalmic symptoms superadded is not benefited by removing a part of the gland unless the trachea is pressed on and the breathing interfered with. Ladies, however, are prepared to sacrifice a lot in the interests of their personal appearance. Needless to say, I am not referring to adenomatous or cystic goitres, which are obviously surgical conditions.

In exophthalmic goitre I am guided by the intensity of the symptoms, by the result of dietetic and medical treatment, and especially by the absence or presence of indican in the urine. The complete disappearance of indican, as I have already insisted, means that the chances of early improvement are remote, and if the symptoms are at all severe I advise operation. Partial thyroidectomy improves the patient for several months, as it diminishes the amount of thyroxin manufactured. The operation does not attack the cause of the disease, but the improvement in the symptoms may be enough to justify the operative risk. Both parenchymatous and exophthalmic goitre are diseases which run a definite course; the patients get progressively worse up to a certain point, and then, for no apparent reason, they improve, and ultimately get perfectly well—provided, of course, that the symptoms have not proved fatal before improvement sets in. The patients commence to improve when the intestinal flora becomes normal, and, in all probability, an acquired immunity to the suppressed organisms explains the difficulty found in re-establishing the normal flora in these cases. When the subject has been more fully investigated it may be possible, if such is really the case, to diminish or destroy this immunity. Possibly equally good results might be obtained by increasing the immunity of the body to the predominant group, as this would encourage the growth of the opposite group. It is possible that the improvement following removal of a part of the gland in exophthalmic goitre has a definite effect on the degree of immunity to the putrefactive group.

Unfortunately, bacteriology is still in a very primitive stage of development; comparatively unimportant matters have been fully investigated, such as the exact type of growth obtained on rare and complicated media, but very little interest seems to be taken in the exact chemical composition of the bodies formed by pathogenic bacteria when growing in animal tissues. When this subject is worked out, then we can hope to make a decided advance in our methods of treating the diseases caused by them.

The treatment of goitre by means of *x* rays is a non-operative method of destroying a part of the gland tissue, and its use should be regulated by the same considerations that govern operative treatment.

Medicinal Treatment of Goitre.

In parenchymatous goitre I doubt if any preparation does as much good as the local application of dilute mercuric iodide ointment; its beneficial results may be due to the excretion of some of the mercury into the alimentary canal. In exophthalmic goitre treatment is mainly symptomatic, and is useful in that it improves the patient's general condition and comfort; it does not cure the disease, and no one pretends that it does.

GENERAL CONCLUSIONS.

1. Exophthalmic goitre is due to the excessive absorption of tryptophane from the intestine; this in turn is traceable to the absence of the indole producers from the intestine.

2. The absence of indican from the urine indicates the absence of indole producers from the intestine.

3. In exophthalmic goitre the early disappearance of indican from the urine is of serious prognostic importance.

4. Operative surgery has a definite place in the treatment of exophthalmic goitre. Medically, much can be done by suitable dietetic measures.

5. Diffuse parenchymatous goitre is characterized by an excess of indican in the urine, suggesting an excessive destruction of tryptophane. If this excess gives place to a diminution or complete disappearance of indican, that suggests that the case is assuming the exophthalmic form.

6. Myxoedema is due to atrophic changes in the thyroid gland, which loses its capacity for dealing with the circulating tryptophane, whether that substance be excessive, deficient, or normal in amount. The disease is thus compatible with the presence or absence of urinary indican.

THE TREATMENT OF INCIPIENT PHTHISIS.

BY

WILLIAM GORDON, M.D., F.R.C.P.,

SENIOR PHYSICIAN, ROYAL DEVON AND EXETER HOSPITAL.

MORE than a quarter of a century has now elapsed since the open-air treatment of phthisis was brought home again to this country by Dr. Burton-Fanning of Norwich and Dr. Jane Walker, and the time is ripe for a general stocktaking of sanatorium experience.

ENGLISH SANATORIUMS.

There is a general impression that this experience is on the whole disappointing, and recently Dr. Ernest Ward has shown that in his district working-class cases of phthisis have done better in their own homes than those sent to a sanatorium.

No one who remembers working-class consumption thirty years ago will regard open-air treatment as anything but a great advance; and since it was in sanatoriums that open-air methods were developed, no one can hold that sanatorium treatment in a general sense has failed. If there is failure in England, it must be due either to our climate or to defects in individual sanatoriums. That England is less capable than other countries of furnishing the best results is unproved, though the point needs investigation. But that individual sanatoriums are unsatisfactory is suggested by the variations which are becoming evident in the results of treatment in different localities.

THEIR HISTORY.

Bodington.—The open-air treatment of phthisis was an English discovery, first announced, in 1840, by Dr. George Bodington of Sutton Coldfield, but the English medical profession turned it down.

Görbersdorf.—Happily for the tuberculous, the German realized its value. In 1859 Brehmer opened the first open-air phthisis sanatorium at Görbersdorf in Silesia, and I would draw attention to two points about this sanatorium which have been curiously overlooked. In the first place Brehmer chose a locality almost free from indigenous phthisis. In the second place he chose a site which was exceptionally wind-sheltered.

Davos.—In 1862 Spengler of Davos pointed out that indigenous phthisis was rare amongst the inhabitants of his valley, and that such of them as had contracted it elsewhere frequently recovered on returning to their homes. In 1865 patients from Germany began to be sent to Davos and the results were eminently satisfactory. In Davos also there is remarkable wind-shelter, and this "*wind-stille*" has been insisted on by all competent writers as an important factor in the curative influence of the place.

Nordrach and Falkenstein.—The success of Görbersdorf led to the establishment of daughter sanatoriums in different parts of Germany. Two of these have been specially noteworthy—namely, Dettweiler's at Falkenstein and Walther's at Nordrach. Nothing could be more striking than the contrast between their sites and their fortunes. For the first time in the history of sanatoriums we come upon a disappointment. Nordrach was a success; Falkenstein has been demolished.* Falkenstein, the failure, stood high on the southern slopes of the Taunus, "well protected from north

* The reason of the closure of Falkenstein has of course to be inferred. Medically successful phthisis sanatoriums do not close down. It is noteworthy that no new sanatorium has arisen at Falkenstein and that the sanatorium for the poor, opened at Falkenstein by Dettweiler on a small scale in 1892, was afterwards moved to a very different site, in marked shelter from westerly winds, at Ruppertshain, where it remains.

and east" (in the phrase so dear to some medical writers), but imperfectly protected from the western gales. The phthisis death rate of the neighbourhood was 4 per 1,000. Nordrach, the success, is situated in the heart of the Black Forest, at the end of a very sheltered valley, enclosed on all sides by forest-covered heights, facing south-east and with abundant sunlight, under a heavy rainfall, but on a porous, quickly drying sandstone soil, too high to be reached by the far-travelling Rhine fogs, remote from the dust of traffic and from the possible infections of neighbouring communities, and provided with numerous sheltered walks in the surrounding forest. So striking was its success that it became the Mecca of English chest specialists.

Walther.—This brings us to a very interesting personality—very fateful, as I believe, in the history of English sanatoriums—Dr. Otto Walther, "devoted to the English." We English owe mainly to him, I have little doubt, the highly interesting field of climatological inquiry afforded by the surprisingly variegated choice of sanatorium sites made in this country. For to me he gave precisely the advice that I was tired of hearing at home, having by that time discovered how incorrect it was. I visited his valley soon after 1900, and was at once impressed by the skill displayed in his own choice of locality. Walther had by no means followed the almost happy-go-lucky advice he gave to me; and Sir James Fowler has just told us that "it is clear that Otto Walther did not consider the site of his own sanatorium as of little or no importance. He visited more than 200 sites before finding one suitable!" Why, then, did he give his English visitors views so different from those indicated by his own most careful choice, without one word about shelter? One does not know. But his pilgrims went home, full of Teutonic inspiration, and sowed their sanatoriums broadcast, at immense expense, in the manner he had indicated, and have been wondering ever since why the success they looked for has hitherto eluded them!

Their Differing Results.

Only a few sanatoriums seem, so far, to have stated after-results. Dr. Ward's results in South Devon are so strikingly the best that, although his figures are smaller, it is necessary to include them. Seeing that the critical years, in which most deaths occur, include the first four years, we had better confine our attention to his results at the end of four years. For comparison we must deal with other statistics similarly, and this limits us to Frimley Sanatorium (1914 report), Midhurst Sanatorium (fourteenth annual report, 1920), and "Tuberculosis in London" (Dr. Bardswell, *Tubercle*, 1921). I shall only consider the mortalities. Also I shall only deal with "early cases."

Dr. Ward recognizes three stages of the disease—"slight, medium, and extensive." No distinction was drawn between cases showing tubercle bacilli and cases not showing them. For comparison, therefore, we must take together, in the other statistics, the tubercle-positive and tubercle-negative cases on admission. In the Frimley report I have considered the "full-time" cases. As equivalent to Dr. Ward's "slight cases" I have taken those described as "having physical signs indefinite or in one lobe." In Dr. Bardswell's paper the "early cases" are those of the Turban Gerhardt classification. "Almost without exception, the patients underwent treatment in a sanatorium." The patients in these three categories are almost wholly "working-class."

The Midhurst report gives tables which make it possible for one to calculate the results of all the early cases at four years after their discharge; the Turban-Gerhardt classification is used. At Midhurst a much higher class of patient is dealt with.

Comparison of Results at Different Sanatoriums.

	No. of Cases.	Percentage Dead after Four Years.
South Devon (Dr. Ward)—		
Not been in sanatorium	114	2.6
Been in sanatorium	55	11.0
Frimley	197	15.6*
Midhurst	552	20.0†
"London cases" (Dr. Bardswell)	908	31.0

* Not including 39 per cent. lost sight of.
† Three per cent. lost sight of.

Here are surely differences which call for explanation. The reports are by able men; the sanatoriums, so far as they can be identified, are well built and arranged; the patients have been under most skilled care. Then why these differences? Have the sites anything to do with them? That site may exercise an influence the history just given suggests. My own work, published in 1900 and since, strongly suggests it.

The importance of site is gradually becoming recognized. A friend, interested in the matter, has told me a conversation with one who had worked in two Scottish sanatoriums—one on the rainy west, one on the drier east—who said that the patients in the east had done much better than those in the west. Again, at a meeting of the Tuberculosis Society last year the tuberculosis officer of an important northern district told us that formerly all their phthisis patients were sent to a neighbouring seaside town, which the map shows to be exposed to practically every wind, where, as he tersely put it, "they all died," and that, in view of such results, the new sanatorium was being built inland and in shelter from rain-bearing winds.

The Necessary Inquiry.

I would submit that an inquiry into the results of all sanatoriums in this country is necessary and might be carried out somewhat as follows:

1. Early cases only should at first be considered.
2. Only cases with bacilli in the sputum should be dealt with.
3. The results should be stated for each case at the end of five years, especially the "apparent cures" and the deaths.
4. "Working class" cases and well-to-do cases should be separated.
5. For the well-to-do the results should further be compared with those at foreign sanatoriums similarly treated.

Interim Procedure.

In the meanwhile what are we to advise when an early case of phthisis comes before us? My own strong opinion is that he should be warned sedulously to avoid the following climatic conditions:

1. The tropics, except at certain great altitudes in wind-shelter, as in some valleys of the Andes.
2. The immediate sea front (a quarter of a mile inland seems to avoid its bad effect).
3. A damp soil.
4. Impure or dusty atmosphere.
5. Deficient air supply.
6. Deficient sunlight.
7. Fog.
8. Exposure to strong, prevalent winds, especially rain-bearing winds.

We obviously would keep at home cases of acute miliary tuberculosis; acute tuberculous bronchopneumonia; acute tuberculous lobar pneumonia in its acute initial stage; pulmonary tuberculosis supervening on any serious condition rendering home treatment desirable.

Those whom we may send away we shall do wisely first to send to a well placed and well managed sanatorium in this country. If the case seems to be doing well in the sanatorium, he would probably be well advised to stay for six months or longer. When he leaves, if he be a "working-class" patient, he will be fortunate if some open-air colony, in which he can work under supervision, is open to him, such as Dr. Burton-Fanning has instituted in connexion with Kelling Sanatorium in Norfolk. If he is "well-to-do," the question arises whether England is the best place for him.

In England, I would advise some locality where phthisis is known to be uncommon and where climatic advantages, including shelter, seem to account for its rarity.

We must not lose sight of Dr. Theodore Williams's remarkable figures published in 1891. Dealing with "first stage" cases, "affecting one lung only," we may arrange them in tabular form, thus:

Percentages of "Arrest."

"High altitudes" (mainly Swiss)	63
Sea voyages	17
Riviera and South Europe	7

Of "high altitudes" he wrote: "The most surprising feature is the large figure of absolute arrests, which not only were far more numerous than in other climatic results, but were more complete."

I think it may fairly be said that early cases—young, vigorous, uncomplicated, with little or no fever, however

beginning (so long as haemoptysis has ceased)—will get their best chance at Davos, or at some other Alpine station with the climatic conditions of Davos—namely, pure, still, dry, cold, diaphanous, and diathermic air.

Unsuitable early cases for the high Alps are: acute cases, nervous, irritable people, elderly people, chilly people, most laryngeal cases, and those with much emphysema, with heart disease, or with albuminuria.

In choosing other foreign climates than Switzerland we must not forget that Australia, New Zealand, the Cape, Canada, and the United States no longer admit cases of active tuberculosis.

This leaves us a rather narrow choice. Sea voyages are by no means a safe prescription, particularly if they cross the tropics. The Riviera does not appear to give better results than can be obtained in England. Egypt at the present moment does not suggest itself as desirable. Las Palmas in Grand Canary has given good results; its climate should not be confused with the quite different climates of Orotava in Teneriffe and of Madeira. South-eastern Spain and the desert behind Algiers are still advised. In sending phthisical patients long distances their travelling powers must be considered, as well as the luxuries of travel and accommodation which they are prepared to allow themselves; also, and very important, the medical skill available in the health resort decided on. In the light of home sanatorium results all these localities will require consideration.

Conclusion.

To conclude, I would like to leave it clear that, from the foregoing comparison of open-air results, I claim to draw no final inference. They are too few, the definitions of "early" are too various, and the absence of uniform finding of tubercle bacilli renders the diagnoses too uncertain. *What I do claim, and claim strongly, is that they constitute a case for immediate investigation.*

ACUTE PUERPERAL INVERSION OF THE UTERUS.

BY

C. S. LANE ROBERTS, M.S., F.R.C.S.,

CHIEF ASSISTANT AND TUTOR, WOMEN'S DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL; PATHOLOGIST AND REGISTRAR, SOHO HOSPITAL FOR WOMEN.

THE two cases of puerperal inversion here recorded were recently met with in hospital practice, and are published by Dr. Croft's permission.

Case I.

A. L., aged 21, 2-para (the first being a miscarriage), a healthy woman with strong abdominal muscles, had a normal first and second stage, the latter lasting two hours; twenty-five minutes later the uterus was grasped to see if the placenta had separated, and as it was uncertain whether separation was complete control and pressure were maintained on a well contracted fundus, and, the patient of her own accord bearing down, part of the placenta appeared at the vulva. During this time there had been no excess of haemorrhage: the sister in charge then said the hand on the abdomen seemed to lose the uterus, and the emerging placenta was gradually followed by the completely inverted uterus, the whole appearing slightly larger than a foetal head, with part of the placenta separated but quite two-thirds remaining attached to the uterus, which accounted for the uncertainty of separation and the slight haemorrhage only. At once the parts were surrounded with hot sterile towels and the best available antishock treatment instituted.

Thirty minutes later (that is, fifty-five from delivery) I saw the case, finding the degree of shock markedly progressive, the patient looking extremely ill, with deep sighing respiration and almost imperceptible pulse. The inverted structures were not examined, but the abdomen gave no uterine swelling whatever, so that the condition was evidently one of complete uterine inversion. It was decided to leave the uterus *in situ*, with the placenta attached to avoid superimposing any haemorrhage on the prevailing shock. The antishock treatment was continued, though no morphine, no pituitrin, and no intravenous medication were administered, subcutaneous saline, hypodermic camphor, and ether being given.

Fifteen minutes later (that is, seventy from delivery) the patient appeared moribund, the pulse being quite imperceptible; so, as (1) her condition seemed hopeless, (2) she had not reacted to antishock treatment given for forty-five minutes, but had become steadily worse, (3) the husband had been sent for, (4) the apparatus was ready for an instant blood transfusion, it was decided to risk replacing the uterus. Accordingly the placenta was peeled off the uterus, very little haemorrhage occurring; the uterus was quite easily replaced through the relaxed cervix, and a hot intrauterine douche given; no pituitrin was administered as there was no bleeding of any account, and injection of this drug has been followed by reinversion. It was difficult to decide on the immediate effect of the replacement, as the general condition seemed so bad, but it appeared still further to deepen the shock, so that the case became quite hopeless.

Ten minutes later (that is, eighty from delivery) the husband arrived, so that transfusion was immediately performed of 22 ounces; the patient's colour slowly returned, and her condition improved.

The puerperium was apyrexial, and the lochia normal; on the fourteenth day vaginal examination showed the uterus a little bulky, but otherwise normal in shape, consistence, mobility, and position, so that the patient was discharged the same day.

Case II.

A. H., aged 22, one previous child, had a difficult labour (forceps delivery) and severe *post-partum* haemorrhage. She got up on the tenth day and seemed quite well till the sixteenth day, when during the act of defaecation she felt her "womb drop"; the doctor sent for made a diagnosis of uterine inversion. The patient was admitted to hospital on the seventeenth day under Dr. Croft. Under an anaesthetic the vagina was found to contain a sloughy-looking mass, corresponding in shape and size to the inverted fundus of the uterus; the body of the uterus was not felt on bimanual examination. Manual replacement was found difficult owing to the rigidity of the cervix—the operation took close on forty minutes; it was followed by an intrauterine douche and iodoform pack; the chief difficulty, Dr. Croft said, was to start a dimpling of the uterine wall.

The puerperium was not eventful, and vaginal examination on the fourteenth day disclosed the body of the uterus normal and the cervix closed.

In the first case the result would certainly have been fatal had it not been possible to do blood transfusion. Owing to the lack of response to the antishock treatment, it seemed that there was nothing to be lost by risking replacement of the uterus, but the effect was apparently to deepen the shock as far as could be discerned with the patient in so precarious a way.

The ideal treatment would appear to be immediate blood transfusion with later replacement of the uterus. If blood is not available it would be worth while to try gum acacia solution, but saline seems useless if not harmful in certain cases.

Reference might be made to a case reported by Dr. Barris[1] of blood transfusion in a case of uterine inversion in which, two hours after delivery, the midwife tried forcibly to express the placenta and made traction on the cord, with the result that the patient felt something come down, and was admitted to hospital eleven hours later with the fundus inverted inside the vagina; the immediate treatment with pituitrin and a vaginal douche was directed to the prevention of shock. Two days later the first blood transfusion of 100 c.cm. was performed, and twenty-three days after that a second of 600 c.cm. Reposition of the uterus was done in the seventh week with an Aveling repositor, as there had been local sepsis and Carrel treatment had been called for.

The second case falls more into line with the series published in 1920 by Dr. Spencer, of which the first three cases were admitted with the inversion on the fifth, nineteenth, and twenty-second days, reduction taking place on the sixteenth, fortieth, and twenty-second days respectively, though in each it was uncertain when the actual inversion occurred; the next two cases occurred nine months, and two years and eight months, after labour; the last four being associated with tumours, and appearing seven, twelve, thirteen, and twenty-five years after labour, reduction in each case being effected by Aveling's repositor.

Reference.

[1] *Transactions of the Royal Society of Medicine*, January, 1921.

DR. HUBBARD, director of public health education of the New York Department of Health, has recently published statistics which appear to show that since the last year before the prohibition law took effect there has been a constant increase in New York in the number of arrests for drunkenness, the number of deaths due to wood alcohol poisoning, and the number of persons admitted to hospital suffering from acute alcoholism. During last year 5,624 persons suffering from acute alcoholism were admitted to Bellevue and King's County hospitals, as compared with 3,345 in the preceding year. In 1922 the number of deaths from alcoholism was 295, as against 141 in 1921. The number of deaths, however, is smaller than it was in the years preceding prohibition; in 1916, for example, 690 persons died in New York from alcoholism; the low-water mark was reached in 1920, when there were 127 deaths, but since that time there has been a rapid increase. The number of arrests for drunkenness in New York in 1922 was 7,866, as against 6,233 in 1921.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PSORIASIS.

IN the BRITISH MEDICAL JOURNAL of July 8th, 1922, appeared a note recording marked benefit to a case of psoriasis by the administration of collosol manganese.

Having several cases under my care, I gave the method a trial. The first was an obstinate case of six years' duration. After eight doses she appeared on the high road to recovery, and I felt that at last a cure was found for an old enemy. Bearing in mind the danger of drawing conclusions from insufficient data, and the fact that patches of psoriasis often exhibit a tendency to clear up with almost any standard treatment, I placed seven other patients under the treatment.

The drug used was Crookes's collosol manganese, which was given by intramuscular injection. Vaseline was applied locally to the patches. No other medicine, internal or external, was used. The patients were girls of ages 12 to 17 years. Dose: four injections of 0.5 c.cm. at four-day intervals, followed by doses of 1 c.cm. for five to eleven doses.

Brief notes of the cases follow:

Case 1.—D. C., aged 17. Distribution: Head, back, chest, axilla, arms, and legs. The patches varied from the size of a threepenny piece to larger than that of a five-shilling piece. After receiving four injections of 0.5 c.cm. and four of 1 c.cm. the patient was immensely better—had not been so well for six years; there were only scars and staining. Treatment was continued, and seven further doses of 1 c.cm. were given. The improvement was not maintained, and within four months patches recurred as at outset.

Case 2.—A. G., aged 16. Elbows and knees had patches varying from the size of a shilling to that of half a crown. Treated with four injections of 0.5 c.cm. and seven of 1 c.cm. No improvement.

Case 3.—D. S., aged 16. Elbows, knees, and legs chiefly affected, the size of the patches ranging from that of a shilling to a threepenny piece. Had four doses of 0.5 c.cm. and seven of 1 c.cm. No improvement.

Case 4.—L. V. G., aged 14. Small patches on elbows, knees, legs, and back. Had four doses of 0.5 c.cm. and six of 1 c.cm. No improvement.

Case 5.—M. P., aged 11. There were patches from the hip to the knee the size of half a crown; from knee to ankle, and on chest, back, arms, and scalp they varied in size from that of a threepenny piece to a sixpence. The patient was treated with four injections of 0.5 c.cm. and eleven of 1 c.cm. There was no improvement.

Case 6.—M. Mc., aged 15. The arms had patches varying in size from that of a threepenny to a five-shilling piece; smaller patches on thighs, legs, and buttock; the back and scalp were also affected. Received four doses of 0.5 c.cm. and six of 1 c.cm. No improvement.

Case 7.—H. H., aged 11. There were patches on the back the size of a shilling to a five-shilling piece; large patch on thigh, and several patches on chest. Had four injections of 0.5 c.cm. and ten of 1 c.cm. The back showed slight improvement; no improvement of thigh.

Case 8.—N. L., aged 12. A few patches. Had four injections of 0.5 c.cm. and five of 1 c.cm. Slight improvement.

G. GUSHUE-TAYLOR, M.B., B.S., F.R.C.S.

Barkingside.

PREGNANCY IN A FIBROID UTERUS.

A NATIVE woman, aged 26 years, was admitted to hospital on October 24th, 1921, with symptoms which seemed to point to suppurating ovarian cyst, pyosalpinx, or ectopic gestation. There was a tumour on the left side of the pubes and a painful mass, which could be felt from the vagina, behind the cervix. She had a good deal of pain, which had increased very much since she had been previously discharged from hospital, on October 17th. She had been admitted originally for the same complaint on October 5th, 1921, and after rest in bed and fomentations the pain was relieved, but as I was not sure as to the presence of pregnancy I decided to wait, and discharged her from hospital. However, she was readmitted, and two days later I operated. I found that the uterus was a mass of fibroid tissue, except for the anterior surface; a fibroid tumour, about the size of an orange, projected from the postero-superior surface. The uterus was becoming impacted in the pelvis; it was removed by subtotal hysterectomy, and was found to contain two foetuses of about two months' development. The patient was unmarried and at first denied the possibility of pregnancy, but later admitted having missed one period. She was discharged from hospital quite well on November 28th.

Antigua, B.W.I. C. M. ROLSTON, F.R.C.S.Edin.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

BIRMINGHAM BRANCH.

THE third ordinary meeting of the Branch was held at the Medical Institute, Birmingham, on February 15th, the chair being taken by Mr. ALBERT LUCAS, President of the Branch. Mr. SEYMOUR BARLING opened a discussion on "The diagnosis and treatment of chronic ulcer of the body of the stomach."

Having referred to the many unsettled problems connected with the etiology of the initial condition and the causes which led to recurrence, Mr. Barling proceeded to a detailed assessment of the relative values of clinical, radiographic, and chemical investigations in arriving at a diagnosis. The two former must, he said, be considered together, and although radiography gave a confidence and accuracy to diagnosis that nothing else did, it was occasionally wrong. With reference to treatment, the scope and limitation for medical treatment were first considered, and then the most suitable surgical procedures discussed. Mr. Barling considered that the ideal operation should consist in removal of the site of the ulcer together with a drainage operation, to alter the physiological and mechanical conditions of the stomach. These criteria were secured by partial gastrectomy, also by excision of the ulcer or its destruction by cautery, followed by gastro-enterostomy. He did a partial gastrectomy in more than half his cases at the present time, but preferred the less mutilating operation of excision and gastro-enterostomy in the less severe cases. In his experience malignant disease following ulcer was of less frequent occurrence than the figures given by many surgeons would have led one to suppose. In a series of fifty five cases, of which 50 per cent. were of ten years' standing or over, only two were found in which clinical or microscopical evidence pointed to this having occurred.

Mr. W. BILLINGTON advocated double gastro-jejunostomy, in order to drain the stomach on each side of the ulcer, together with entero-enterostomy. He pointed out that this operation was applicable to all cases, whereas partial gastrectomy was not. He found that this procedure gave immediate results greatly superior to any other method he had tried, and after four and a half years' experience of it had had no cases returned to him with recurrence of symptoms.

Dr. HAROLD BLACK said that as a rule no help was afforded by radiography in the detection of acute ulcers. In chronic ulcer positive evidence of the presence of ulcer was obtained when the actual ulcer crater was seen. When no crater was seen the presence of ulcer might be surmised when certain changes in the anatomy or function were present. These changes were demonstrated by lantern slides and their reliability as evidence discussed.

Dr. T. L. HARDY stated that fractional studies of the gastric contents in these cases showed that the curves mainly followed the normal type and that help in diagnosis could not be expected from them. As regards treatment, he thought that this should invariably be carried out in three stages—preliminary treatment, treatment proper, after-treatment. The work of Rosenow, and more recently that of Kopeloff, afforded ample experimental evidence of the importance of infection in the mouth, nose, and nasopharynx, and the removal of septic foci as a necessary and preliminary step. He pointed out the principles on which treatment proper should be based, due weight being given to *x*-ray and chemical findings. He laid special emphasis on the need for prolonged and thorough after-treatment, and thought that results would be greatly improved if more attention was paid to this aspect. The better education of the patient in regard to his disability was much to be desired, and written instructions as to diet and mode of life should always be given.

Dr. G. A. WILKES said that it was the part of the general practitioner to diagnose gastric ulcer in its early stages. He mentioned the three cardinal symptoms of pain, haematemesis, and melaena; but at an earlier stage he pinned his faith to the "nerve reflex" of skin and muscle tenderness with rigidity. Recurrent attacks of the nerve reflex meant ulcer. The position of the tender area indicated the position of the ulcer in the stomach.

Sir GILBERT BARLING emphasized the necessity of excising the gastric ulcer and of performing gastro-enterostomy at the

same time. He had adopted this as the operation of choice many years ago after a fatal case of haemorrhage following gastro-enterostomy. The haemorrhage had taken place from the floor of the ulcer, which had not been excised at the time of operation. Additional reasons for the excision of the ulcer were the risks of perforation and cancer. The latter followed simple ulcer sufficiently often to make excision imperative. Finally, the patient whose ulcer was left *in situ* led a very miserable existence.

CAPE OF GOOD HOPE (WESTERN) BRANCH.

Infective Tonsillar Disease.

A MEETING of the Cape of Good Hope (Western) Branch of the British Medical Association was held in Cape Town on February 23rd, when the President, Dr. C. M. MURRAY, occupied the chair. The business of the evening was a debate on "The etiology, symptomatology, and treatment of infective tonsillar disease," organized by Mr. C. E. JONES-PHILLIPSON.

Dr. W. P. MULLIGAN opened the discussion with an account of the bacteriology and etiology from the laboratory viewpoint. He divided infective tonsillar disease into acute and chronic types: the former included pyogenic infections, Vincent's angina, diphtheria, and scarlatina; the latter comprised tubercle, syphilis, and numerous obscure tropical conditions, which produced infective tonsillitis. Predisposing factors, particularly in children, were discussed by Dr. C. H. KRÜGER, who gave a comprehensive and practical review of the tonsillar ailments of early childhood. The problems of diagnosis were dealt with by Mr. R. L. SCOTT. Acute follicular tonsillitis and acute septic sore throat were discussed in detail, while chronic cryptic and chronic suppurative tonsillitis were presented as typical chronic affections requiring skill in elucidation. Tubercle, syphilis, keratosis pharyngis, and Vincent's angina were considered in turn. The clinical picture was presented by Mr. J. LÜCKHOFF. The recurring pharyngitis, the accumulated débris in a tonsil lacuna, the lymphatic hyperplasia of an incomplete enucleation, and the frankly diseased tonsil were indicted seriatim and related with the long train of general symptoms and illnesses for which they might be individually responsible. The question of the possibility of the tonsil being an internal secretory gland was discussed. Mr. C. E. JONES PHILLIPSON followed with a consideration of prognosis. He argued that in the vast majority of acute cases the prognosis was good, but the outlook was bad in all chronic tonsillar infections, chiefly on account of associated sequelae. Acute attacks represented efforts on the part of the lymphoid tissue of the tonsil to produce a natural immunity. If these efforts failed, the tonsil itself then became a positive source of danger. Children starting adolescent life without a healthy tonsil were very seriously handicapped. The prognosis of general systemic disorders resulting from the entry of organisms by way of an unhealthy tonsil was discussed. The end-results of enucleation were briefly reviewed. Mr. PH. A. SMUTS confined himself to the treatment of acute and chronic tonsillitis of the more usual type. He dwelt on the fact that mere hypertrophy was often not a sufficient cause for tonsillectomy, and that small tonsils often emitted unexpected pus on pressure. He argued that tonsillectomy was the only certain cure for chronic tonsillitis, and in conclusion discussed the employment of suction apparatus in throat surgery. Dr. G. W. BAMPFYLDE DANIELL made a contribution to the question of anaesthesia in tonsillar surgery. He condemned the use of chloroform and of closed ether, and gave as his opinion that the anaesthesia of choice was open ether with or without oxygen. Dr. S. E. KARK wound up the discussion, and made some interesting observations on the etiology and significance of adenoid disease.

Dr. W. F. RHODES, assistant bacteriologist, Union Health Department, then read a paper on the diagnosis of diphtheria in the laboratory, the significance of the Schick reaction, and the divergence of opinion regarding the dosage of antitoxin and its value in dealing with contacts. Mr. P. M. DANEEL, Dr. R. M. MUIR, Dr. W. A. RAIL, Dr. N. O. WILSON, Dr. A. REITH FRASER, Mr. LÜCKHOFF, Mr. SCOTT, Mr. JONES-PHILLIPSON, and Mr. SMUTS took part in the ensuing discussion.

AN International Congress of Municipal Hygiene will be held at Strasbourg from July 15th to 18th. The subscription is 25 francs. Further information can be obtained from M. Albert Parenty, 10 Rue Lavoisier, Paris.

Reports of Societies.

PSYCHONEUROSIS AND MENTAL DEFICIENCY.

AT a meeting of the Section of Psychiatry of the Royal Society of Medicine on March 13th, Dr. C. HUBERT BOND presiding, a brief discussion took place on the association of psychoneurosis with mental deficiency.

Dr. C. S. MYERS gave details of two cases in point, both of youths of adolescent age who had the minds of children of six or eight. In both cases the influence of an early emotion was pronounced, in one that of fear, and in the other that of a germinating sexual feeling. The original experience (that of a funeral) of the first was not repressed at all, but the youth was very voluble on the subject, and all his talk was coloured by the circumstances of death and the grave. In the second case the original experience was only recoverable in the hypnoidal state, and the removal of the repression seemed to bring about a noticeable improvement. In this case the demeanour of the lad was one of prurient curiosity. Dr. Myers suggested that not only was the mental deficiency responsible for the gravity of the psychoneurotic condition, but that the latter reacted in turn on the slowly developing mind of the mentally defective child and aggravated the deficiency. It was unlikely that mental deficiency was ever directly and solely due to a psychoneurosis, but he was convinced that certain cases of mental deficiency could be enormously improved if attention were paid in early life to any concomitant psychoneurotic disturbance.

Dr. HUBERT BOND said that looking back upon his past clinical experience he could not recall that cases of mental deficiency were at all prone to show anything like a psychoneurosis, but certainly cases of that type often showed the psychoses, which were quite definite. It was exceedingly rare for cases of mental deficiency to show anything like true paranoia. On the other hand, so-called moral imbecility had been likened rather to a paranoid condition than to true mental deficiency, and he thought there was something in that argument.

Dr. MYERS, in answer to questions, said that he was inclined to doubt whether, without any mental deficiency or backwardness to begin with, a psychoneurosis, however strong the disturbance, could produce a mental defect.

Genius and Insanity.

Dr. H. J. NORMAN opened a discussion on genius and insanity. He admitted that a satisfactory definition of either term was difficult, but some relationship between the two things had been long noted. Even Aristotle observed that literary men—poets in particular—suffered from melancholia. Seneca made a similar remark. The so-called demon of Socrates was a hortatory hallucination. More dogmatic writers had stated that genius was really a neurosis. That, of course, was far too sweeping. One of the most satisfactory definitions of genius was by a man who himself was a good example of it, and who eventually committed suicide—B. R. Haydon, the historical painter of the early nineteenth century. Haydon described genius as nothing more than "our common faculties refined to a greater intensity." Huxley said that genius meant innate capacity of any kind above the average mental level, and that the genius among men was in the same position as the sport among animals and plants. To Dr. Norman it seemed that the brain organization of different individuals must be as varied as the facial expression or the muscular development. Certain types of brain must be more prehensile than the rest, have a greater potential for education, be able more readily to acquire knowledge, and have greater capacity for storage. In such brains there must be marked development of the association fibres and ready facility for canalization. In fact, their structure represented the latest development and the highest acquirement, and therefore, as Hughlings Jackson said, they were the most complex, the least organized, and the likeliest to break down. It was, of course, a fallacy to say that because a genius became insane therefore insanity was the cause of genius. That argument was disproved at once by the production of a single genius who was not insane. But it was obvious that in the genius there was instability of the nervous system, resulting in a brain of exceptional calibre for as long as the system maintained its balance, but with a tendency to topple over into insanity. When the insanity occurred, as a rule the genius came to an end. The two did not run concurrently, though they might

alternate. An example of this was Nietzsche. With confusional insanity it would be quite impossible to have any collective mental effort. On the other hand, mania in a mild degree might cause the mental processes to go forward more rapidly. This was observed quite frequently in the early stage of mania. With paranoia, even when persistent, there could be great mental power. But insanity might and often did terminate a period of mental brilliance. It was all a question of unstable equilibrium. There was one other factor involved which it was too early as yet to discuss. It was possible that these changes from mental brilliance to insanity were due to fluctuations in the discharges of one or other of the ductless glands. The fact that epilepsy might be associated with an extraordinary outburst of mental energy was possibly connected in some way with the ductless gland secretions. Dr. Norman believed that the whole question could be approached best from the biological standpoint. Little progress was to be made so long as it was made a matter of pure psychology.

Dr. W. H. B. STODDART doubted Dr. Norman's premisses. He himself had known two great geniuses whose names would be remembered to the end of time—Hughlings Jackson and Professor Freud—and both of them were extremely sane individuals. Darwin, Copernicus, and Galileo were undoubted geniuses, but he had never heard their sanity impugned. Nobody doubted that the mind and the nervous system were intimately related, but the point of view of psychology was that the study of the nervous system was not sufficient to lead to a knowledge of psychology, normal or morbid; it was necessary to take, as it were, a dive off the deep end and approach psychology *per se*. Psycho-analysts had found that they were able to explain the psychoneuroses and, to some extent, the psychoses in a way that was not possible by the mere study of the morbid anatomy of the nervous system. In some of the psychoses there was no morbid anatomy; the nervous system was perfectly normal.

Dr. BERNARD HART said that it was out of the question to maintain that genius was invariably insane; yet genius and insanity did occur together in a sufficient number of cases to lead one to search for some connexion. He himself favoured the conception that human beings were, roughly, divisible into two types, the sensitive and the stable, the former reacting continually to outward impressions, the latter able to shut out events and pursue their own steady way. To the extra-sensitive type would no doubt belong the larger proportion of the insane, and also the larger proportion of geniuses.

Dr. JOHN CARSWELL read some autobiographical notes he had collected from the writings of Robert Burns. These gave evidence of a constitutional neurasthenia in the Scottish poet, and of an almost definite melancholia.

THE INFLUENZA PANDEMIC, 1918.

AT a meeting of the Pathological Section of the Sheffield Medico-Chirurgical Society held at Sheffield University on March 22nd, with the President, Dr. RUPERT HALLAM, in the chair, Professor J. G. ADAMI, F.R.S., gave a masterly survey of the development and pathology of the great influenza outbreak of 1918.

Professor Adami at the outset apologized for having no recent work to put before them, as his work as Vice-Chancellor of Liverpool University left him little time for pathology. It had been his task to draw up a report on influenza affecting the troops. That report, finished two years ago, had unfortunately not yet been published, and he was afraid that by the time it was published it might be out of date. The commencement of the great epidemic was usually considered to have been about April or May, 1918. But there were records of sporadic groups of cases often called "purulent bronchitis," but apparently influenzal, occurring as far back as December, 1916. He would therefore regard the epidemic as presenting three successive phases in its development: (1) From December, 1916 (or earlier), to May, 1918, sporadic groups of cases—often not recognized as influenzal. (2) From May to August, 1918, great numbers of cases, of short duration, comparatively mild—"the three days' flu'." (3) The autumn of 1918—very great numbers of severe cases, with an appalling mortality, chiefly from pneumonia.

In reviewing the development of the epidemic there were certain things that the pathologist must keep in mind as bearing on its protean manifestations. One and the same strain of organisms might cause different types of lesions in different stages of the epidemic, because it had acquired increased virulence as the epidemic progressed. Further, secondary invasions were common. In 1916 and 1917 sporadic groups of cases of "purulent bronchitis" were reported and studied by different observers at Etaples, Boulogne, Aldershot, and in America. Fatal cases usually presented the following common features: acute bronchitis and bronchiolitis with purulent exudation, denudation of the lining membrane, and the presence of a small Gram-negative coccobacillus, the air cells being but little affected. In some of these cases Pfeiffer's bacillus was grown in pure culture from the terminal bronchioles, but in most of the cases before 1918 their influenzal nature was not recognized. The pathological lesions were essentially similar to those found in the influenza cases of 1918.

Dealing with the *post-mortem* appearances of the 1918 cases, it was pointed out that one cardinal feature was the regular presence of tracheitis. The larynx and uppermost rings of the trachea usually escaped, but its lower third and bifurcation were almost constantly acutely inflamed. In this area intense purple congestion was followed later by desquamation of the ciliated epithelium. This acute desquamative inflammation appeared to have begun near the bifurcation, and to have spread both upwards and downwards. It was of great significance. Removal of the ciliated epithelium at this spot meant the disappearance of the last effective barrier to the invasion of the lung by inhaled bacteria. This helped to explain the great frequency of secondary invasions in influenza. Further, it was noteworthy that the secondary infections most commonly met with in this disease were by those organisms least susceptible to the bactericidal action of serum. It should be remembered that it was precisely on this area—the neighbourhood of the bifurcation of the trachea—that those bacteria which had succeeded in passing the defences of the upper air passages would impinge.

The difference in the lesions of the lungs found in the last and more severe stage of the epidemic from those found in the earlier and less severe cases was largely due to the increase in virulence of the bacillus, already alluded to. A classical observation of Metchnikoff's illustrated this point. He injected anthrax virus into the two ears of a rabbit; in one ear he injected a strongly active virus, in the other an attenuated virus. The stronger virus produced serous exudation and haemorrhages, the weaker one caused cellular infiltration. Corresponding differences were exemplified in the lung lesions of the more severe and less severe cases of this epidemic. In some of the severer cases the lesions seemed brought about by intense toxic action rather than by direct invasion. As regards secondary invasions the pneumococcus, a haemolytic streptococcus, and *Staphylococcus albus* were those most frequently met with.

Summing up his observations, the lecturer considered that the following postulates were justified:

1. One agent, and one only, was primarily responsible for the cases of the pandemic.
2. This agent was the influenza bacillus.
3. In the majority of cases other organisms invaded the lungs and were responsible for many of the conditions found in fatal cases.

He considered that pathologically the cases studied presented a characteristic series of changes which in their totality, in their succession and association, were specific and peculiar to this one disease. He especially emphasized in this series acute tracheitis characterized by denudation, and acute bilateral bronchitis and bronchiolitis, with purulent exudation in the milder cases, sanguineous in the more virulent, and with relatively slight involvement of the air cells. Nothnagel's account of the pathology of the great epidemic in 1890 and the following years corresponded very closely with our later findings.

On the motion of Professor DOUGLAS, seconded by Dr. PLEASANCE, a hearty vote of thanks was accorded to the lecturer.

INTRACRANIAL AEROCELE.

A MEETING of the Section of Pathology of the Royal Academy of Medicine in Ireland was held on March 2nd, with Dr. GOULDING in the chair, when Sir WILLIAM WHEELER and Dr. E. C. SMITH read notes of a case of intracranial aerocele, with pneumococcal meningitis.

The diagnosis of fracture of the anterior fossa of the base of the skull could be made with certainty. The patient was mentally confused, but was able to swallow and to answer questions with fair

intelligence. The skull was opened over the right frontal lobe. On incising the dura, air bubbled out in small quantities, followed by blood-stained cerebro-spinal fluid. The general blood pressure was low and the brain correspondingly retracted. The frontal lobe of the brain appeared in no way injured, but on free exposure an unusual phenomenon was observed. The patient was breathing heavily; on inspiration the frontal lobe moved upwards from the base of the skull, and fell back again on expiration. This movement of the brain, synchronous with respiration, was well marked, and rendered obscure the natural pulsation. It was obvious that air under some pressure was passing from the nose through a rent in the dura in the neighbourhood of the cribriform plate of the ethmoid and roof of the orbit. It was difficult, however, to understand, with the dura widely opened by the operation, how the force of air was sufficient to raise the brain on each inspiration; yet the movement was indistinct. After operation the condition of the patient improved considerably. Hexamine was administered freely by the mouth, and small doses of hyoscine assisted in controlling restlessness and irritability, which at times increased to a state of violence. Six days after operation the temperature rose to 102° F., the patient became unconscious, the breathing stertorous and the pupils dilated. The right pupil was still slightly larger than the left; both contracted to light, and there was a faint conjunctival reflex. Dr. Milne Henry withdrew by lumbar puncture 30 c.cm. of turbid fluid, containing a pure culture of pneumococci. During the withdrawal of the fluid the blood pressure fell from 130 to about 110, and rose again about fifteen minutes afterwards. The temperature continued to rise until it reached 105°, and the patient died of meningitis on the eighth day after operation.

In a paper by Grant of Philadelphia (*Surgery, Gynecology, and Obstetrics*, February, 1923, p. 251) is recorded a case of intracranial aerocele following a fracture of the skull; Grant had found ten recorded cases of the condition in recent years. The recorded cases suggested that, owing to the danger of infection, the presence of pneumocranium immediately following injury was an indication for operation, and an attempt should be made to close the dural tear. If five or six days had elapsed, when aerocele was discovered, the sinus might have spontaneously closed, and the policy of watchful waiting for absorption should be adopted. If the possibility of infection could be excluded, the air was relatively innocuous, and would be ultimately absorbed. In making the diagnosis of fractured base of the skull, it was convenient to consider the signs in three classes—certain signs, probable signs, and uncertain signs. If cerebro-spinal fluid escaped from the nose, ear, or mouth, a fractured base was certain; in rarer cases, brain matter might be extruded, which also rendered the diagnosis certain, and a third certain sign might be added—namely, the demonstration of an aerocele by a skiagram. The points of interest in the case recorded were: (1) the intradural presence of air; (2) the rise and fall of the frontal lobe with respiration; and (3) early dilatation of the pupil on the side of injury without other ocular signs, in the absence of compression, and before the onset of meningitis. Having regard to the high mortality from infection to the meninges in fractures of the base of the skull communicating with the external air, and notwithstanding the general trend of opinion in favour of operation, it seemed questionable whether treatment along conservative lines would not be followed by better results.

Dr. E. C. SMITH exhibited the specimens, and the case was discussed by Dr. CROFTON and Dr. WIGHAM.

Dr. J. H. POLLOCK read (1) a note on an unusual case of pneumococcus infection, with abscess at the root of the aorta, and (2) a note on pernicious anaemia, illustrated by the records of several cases treated by blood transfusion.

Dr. CROFTON read a paper on the treatment of a case of uric acid calculi by therapeutic immunization; by immunization against the microbes isolated from the skin and from the intestinal tract he was able to reduce the production of urates in the body.

Sir WILLIAM WHEELER drew attention to the flooding of the caecum and lower ileum with micro-organisms after purgation. He was of opinion that the presence of bacilli in the urine was consistent with health, and might be indicative of action of the healthy kidneys, although later, in the presence of added pathological conditions, they might lead to disease.

AT a meeting of the Bath Clinical Society, held at the Royal United Hospital, Bath, on March 2nd, with Mr. W. G. MUMFORD, President, in the chair, Dr. H. H. BUTCHER read a paper on tropical abscess of the liver. He laid stress on the number of amoebic carriers among soldiers returned from service in the East, and was practically certain that there would be an increased incidence in the disease during the next few years. The causative protozoon was described and the methods of identification outlined. After tracing the path of the pathological features of the disease, Dr. Butcher passed on to an account of the symptomatology, and finally to the problem of differential diagnosis. Cases and specimens were shown by Dr. S. MARLE, Dr. V. M. COATES, Mr. A. L. FULLER, Dr. R. WATERHOUSE, Dr. F. G. THOMSON, Mr. C. H. TERRY, and Dr. R. G. GORDON.

Reviews.

REMEMBERING AND FORGETTING.

IN a volume entitled *Remembering and Forgetting*,[1] Professor T. H. PEAR discusses the psychology of some of the most interesting facts concerning memory. In the earlier chapters he explains the processes of impression, retention, and recall; gives an account of after-sensations, primary memory images, and revived images; indicates the differences between sensations and percepts, and percepts and images; and discusses the functions of the image. These data constitute, of course, the usual subject-matter of conventional psychology, but the author deals with them along modern lines. He devotes particular attention to the problem of imageless thought and kinaesthetic sensations; he criticizes the extreme behaviourists who would deny the existence of the image, and aptly compares them to "the countryman whose surprise on seeing a hippopotamus caused him to declare that there was no such animal" (p. 62). The consideration of images leads up to psychology of dreams, a subject to which four chapters are devoted. As the author observes, the structural aspects of the dream provide a valuable way of studying the relation between image and meaning. The dream affords a perfect example of the alteration of values, for in it the images increase, decrease, and modify their values and functions very much as material wealth in war time. The dream theories of Freud and Rivers are outlined, and an endeavour is made to show that the processes of condensation, dramatization, and secondary elaboration are operative in determining the structure of thought in waking as well as dream states. Here, as throughout the book, the author's aim is to link up ordinary psychology with the recent developments of medical psychology.

A chapter is devoted to the important and difficult subject of forgetting, and, after discussing Freud's theory of repression and the views of other psychologists, some new and useful suggestions are made in regard to a provisional classification of forgotten experience. The volume contains an appendix dealing with subjects which serve to illustrate many principles laid down in the main part of the book. Professor Pear has written a book in which the student of psychology will find much of interest and value.

PROBLEMS OF PRACTICAL SURGERY.

WHEN Mr. BURROWS undertook to write a book entitled *The Mistakes and Accidents of Surgery*[2] he shouldered a great responsibility. Fair and accurate criticism is at all times a delicate task, but where it is applied to problems so many-sided as those the surgeon has to consider when dealing with the diagnosis of conditions amenable to surgical treatment and the best way of carrying out that treatment, it becomes so extremely difficult that anything like dogmatism is out of place. The title is perhaps a little unhappy. It suggests that the volume deals with those unfortunate errors of judgement or manipulation to which all are liable, and it was no doubt on this supposition that the book was seized upon by a certain section of the lay press to furnish material for sensational articles with scare headlines. The author's main intention, however, seems to have been to discuss certain moot questions and only incidentally to refer to errors or accidents. "Mistake" is a strong word, and before accepting the view that it is properly applied to some particular course of action several things are necessary. It is, of course, conceivable that the departure from custom may be an improvement; but apart from this, when a procedure is criticized it must at the very least be shown that what was done was contrary to the general consensus of surgical opinion. With a great deal of what Mr. Burrows has to say most surgeons will agree, but there are statements and inferences with which many of them will not agree.

The book is arranged in sections according to the various parts of the body, and, as each portion comes under review, attention is drawn to various acts of omission or commission which Mr. Burrows regards as errors.

We come first to what the author holds to be errors in connexion with head injuries. He deprecates the application

[1] *Remembering and Forgetting*. By T. H. Pear, M.A., B.Sc. London: Methuen and Co., Ltd. 1922. (Cr. 8vo, pp. xii + 242; 9 diagrams. 7s. 6d. net.)

[2] *The Mistakes and Accidents of Surgery*. By Harold Burrows, C.B.E., M.B., B.S., F.R.C.S. London: Baillière, Tindall, and Cox. 1923. (Demy 8vo, pp. viii+470. 10s. 6d. net.)

of hygienic measures to the external auditory meatus in fracture of the middle fossa of the skull communicating with the middle ear; but we question whether the majority of surgeons would agree with him. It would seem, too, unnecessary to sound a warning against opening the dura when it bulges into a trephine opening; this is but a natural event, and as such it is recognized. Perhaps Mr. Burrows would imply some quantitative consideration, but in a critical treatise there is a duty to be exact. In the same connexion the advice that a bulging dura calls for lumbar puncture is of doubtful validity.

There is a chapter dealing with the errors which may arise in connexion with tuberculous glands in the neck, and many surgeons will be surprised to be told that the correct routes of access to the glands are obtained by incisions, "one along the front border of the sterno-mastoid for exposure of the anterior triangle, and the other along the hinder border of the muscle to open up the posterior triangle." We tremble for the intervening skin.

Mr. Burrows no doubt realizes that he is living in a glass house, and, though he has defied the advice of the proverb, we have no wish to throw stones; but we would remind him that the sterno-mastoid artery which accompanies the spinal accessory is not a branch of the superior thyroid, but is derived from the occipital, and that a haemorrhage which occurs on the day succeeding operation is a reactionary and not a secondary haemorrhage. When Mr. Burrows is engaged in criticism it is unwise to give the enemy an opportunity of hoisting him with his own petard. Mr. Burrows advises that the best way in which to define the internal jugular vein is "to free the digastric muscle and to retract it upwards." This piece of advice must be regarded as dangerous; it may indeed be fertile in disaster to the inexperienced operator.

A great deal of debatable matter is introduced into that portion of the book which treats of goitre; the section dealing with exophthalmic goitre contains the statement that "to operate for Graves's disease often is malpraxis." This, if we understand it aright, for the sentence is not clearly expressed, cannot be accepted as a good criticism, and the use of the term "malpraxis" is surely a mistake. We find it stated that "Tetany . . . probably is attributable to the removal of an excessive amount of the gland tissue"—there is no mention of the parathyroids; and again, crushing of the isthmus or the lateral lobe is condemned as an unnecessary and perhaps dangerous practice, Mr. Burrows maintaining that "it is better to cut through this structure with a sharp knife"; the conflict of opinion on this point is probably correspondingly acute. We dislike the advice that free drainage is necessary after thyroidectomy in order to remove the "surprisingly large" amount of colloidal material which may escape from the wound.

In speaking of tracheotomy it is said that "it takes a considerable time (from ten to twenty minutes) to kill a healthy man by suffocation"; many surgeons have had painful experience of the incorrectness of this pronouncement. The soundness of Mr. Burrows's advice that division of the isthmus of the thyroid gland is to be recommended as a routine step in the operation of tracheotomy is open to question. We would remind him also that his condemnation of the rigid tracheotomy tube is not generally accepted.

In discussing epithelioma of the tongue no mention is made of the importance of removing the omohyoid glands, and the risk of opening into the mouth during the dissection of the cervical lymphatics seems to be exaggerated. The section dealing with pleural effusions contains a great deal of debatable matter. In the operation for removal of the breast the statement that "attempts to save the subscapular nerves, for example, will not only take up precious time but may impair the thoroughness of the clearance in a vital situation" surely demands revision; many surgeons would regard it as very dangerous advice, especially for the beginner.

It is unnecessary to elaborate any further disputable statements; sufficient has been said to demonstrate that they are by no means sparse. Our considered opinion is that this book has failed in its object—if it is a criticism of the methods and judgement of others, it must be accepted as an individual criticism, and therefore by no means infallible. We do not think that any useful purpose has been served by its publication, because the place which it was intended to take is already occupied by the majority of our reliable textbooks, while many of the individual opinions which it expresses are open to serious criticism.

PULMONARY TUBERCULOSIS.

To the third edition of the book on *Pulmonary Tuberculosis*,[3] by Dr. FISHBERG of New York, two new chapters have been added—one dealing with the relations between pulmonary tuberculosis and the rest of the body, the other treating of the medico-legal aspects of the disease. The former subject is of especial interest, as it has hitherto been quite inadequately considered. So much attention is apt to be devoted to the intensive study of the lung lesion that its effect on the physiology of the body as a whole, and the converse systemic reaction upon the focal area of disease, has only too frequently been neglected. As an example of such a reciprocal influence the author remarks: "There seems to be a distinct antagonism between tuberculosis of the lungs and that of other organs which is not appreciated to the extent it deserves; its diagnostic and prognostic significance cannot be over-estimated." Statistics relating to the percentage incidence of tuberculosis in other parts of the body in phthisical patients are given in illustration of this statement. On the other hand, lymphatism, chronic bronchitis, the arthritic diathesis, hyperthyroidism, and diminished activity of the gonads, amongst others, all tend to exert an inhibitory effect on the development of pulmonary tuberculosis, while other conditions, such as congenital hypoplasia of the heart, pulmonary stenosis, measles, whooping-cough, and puberty seem to favour its evolution. The influence of pregnancy is treated of very fully and in an eminently rational manner. Besides the introduction of additional subject-matter portions of the book have been rewritten so as to bring it thoroughly up to date. We can commend this work very highly; its original observations, its dispassionate method of presentation, and its careful foundation upon ascertained fact, serve to place it amongst the few genuinely authoritative books on pulmonary tuberculosis.

In *A Simple Treatment for Tuberculosis*[4] Dr. OWEN F. PAGET describes his success in the cure of phthisis and of other tuberculous affections, such as those involving glands, bones, joints, and the genito-urinary system, by the nasal insufflation of tuberculin B.E. Severe febrile cases are given 1/6000 mg., subfebrile cases 1/500 mg., and mild afebrile cases 1/40 mg. The bacillary emulsion is made up in the form of a powder, which is introduced by an insufflator into the nostril of one or both sides on alternate days. Care is to be taken to direct the powder upwards so as to reach the region of the ethmoid and superior turbinate bones. The usual length of treatment appears to be about three months, and during the latter part of the period the treatment is accompanied by breathing exercises designed "to open up disused and formerly inflamed bronchioles and alveoli, and to assist the absorption and resolution of consolidated lung, to break down pleuritic adhesions, and to educate the patient in properly expanding his lungs and developing his chest." This treatment appears to be founded upon a belief that it is one of the special functions of the epithelial cells of the nasal mucosa to form antibodies to the tubercle bacillus. The author's original observation was made on a patient suffering from advanced phthisis. Despairing of offering him relief, he advised him to dry his sputum in the sun and sniff the powdered residue up his nose. This case responded in a most remarkable manner—so remarkable as to convince the author of the peculiar immunological properties of the nasal epithelium. To establish this he investigated the skulls of certain animals—the hyena, wild deer, leopard, and sheep—and found that they had very large noses. Now these animals do not suffer from tuberculosis, and the inference drawn was that this insusceptibility was due to the extraordinary size of their noses. The author accepts the estimate that 10 per cent. of human beings are not subject to tuberculosis, and that only 10 per cent. of people breathe through their noses, and seems disposed to conclude that nose-breathing protects against tuberculosis. We have no doubt of the author's sincerity, but is it necessary to point out that, before such inductions can be made, certain premisses must first be substantiated? In the first place no statistics are given to show that tuberculosis is commoner amongst mouth-breathers than amongst nose-breathers. Actually we believe there is a considerable amount of evidence to the contrary. The commonest cause

[3] *Pulmonary Tuberculosis.* By Maurice Fishberg, M.D. London: Henry Kimpton. 1922. (Med. 8vo, pp. xiv + 891; 28 plates, 129 figures. 42s. net.)

[4] *A Simple Treatment for Tuberculosis.* By Owen F. Paget, M.D., Perth, Western Australia. London, Bombay, and Sydney: Constable and Co., Ltd. 1923. (Cr. 8vo, pp. xxiii+80; 7 figures. 5s. net.)

of mouth-breathing in children is the presence of adenoids, yet, according to Fishberg, it is uncommon for children with adenoids to develop tuberculosis. Again, the animals that he mentions are living in a more or less feral state. It is not to be expected that they should suffer from tuberculosis, any more than barbaric man in his uncivilized condition suffers from it. If Dr. Paget were to take the case of domesticated animals and to demonstrate that there is a very definite correlation between the size of the nose and the resistance to tuberculosis, he would have better grounds for making his inference. With regard to clinical results, he states that of 500 cases of tuberculosis and suspected tuberculosis amongst the Australian Forces not one failed to improve under treatment. In the first fortnight before treatment commenced there were three deaths. In the following ten months with treatment there were only two deaths. No data are given as to the number proved bacteriologically to be suffering from tuberculosis, nor as to the stage of disease, nor the extent of lung affected. How many of these patients, we may ask, were actually tuberculous? We have it on the authority of the French that in about 70 to 80 per cent. of patients admitted to their military hospitals as suffering from tuberculosis the diagnosis was wrong. It is plain that the author has rather a leaning towards the diagnosis of tuberculosis. He says in effect that, lacking positive evidence of other disease, 90 per cent. of the affections of the nose, tonsils, pharynx, and lungs are tuberculous. Later we read: "The mysteries of physiology and pathology are unlimited. But how extraordinary and marvellous is the chain of events whereby a few insufflations of 1/10,000 mg. of tubercle bacillary emulsion on the epithelial cells of the ethmoidal region can bring about the resolution of a pathological exudate in the alveoli of the lungs!" Very extraordinary and very marvellous! We have no desire to disparage this treatment. It may be good, or it may be valueless; we do not know. Incidentally, there is a certain amount of experimental evidence which suggests that the mucosa of the respiratory tract may play a part in antibody production. But, even though this treatment should subsequently prove efficacious in every form of tubercle, we are bound to say that the case for it, as stated in the volume, is not convincing, and that the evidence in its support is not adequate.

EAR, NOSE, AND THROAT.

DR. GEORGES PORTMANN, Chef de Clinique in the department of Oto-Rhino-Laryngology of the Faculty of Medicine at Bordeaux, has produced, under the title *Consultations Oto-Rhino-Laryngologiques du Praticien*,[5] a volume which should be valuable not only to the specialist but also to the practitioner in dealing with the medical treatment of maladies which are of daily occurrence both in general and special practice. The medical aspect of this specialty, which in recent years has become more and more surgical, is a little apt to be neglected, and Dr. Portmann is to be congratulated on having presented with all the method and precision of the French school a book of this kind at the present moment. Prescriptions and alternative methods of treatment are given for every condition which occurs at all frequently in practice, and, what is even more important, exact instructions for their application, together with indications and contraindications. There are sections on incompatibility of drugs in ordinary use in otology and laryngology, on vaccine therapy and on the general therapeutics of the ear and throat. There can be no hesitation in recommending this book, for it cannot fail to be of great help in dealing both with those innumerable minor maladies which are distressing to the patient and difficult to treat, and also with conditions where surgical treatment is not indicated. Those details, which so often turn the scale between success and failure, are here given in abundance, and the book is one which will be consulted freely and with satisfaction by those for whom it is intended.

The appearance of six editions of Dr. WENDELL C. PHILLIPS's well known textbook on *Diseases of the Ear, Nose and Throat*[6] in the course of eleven years is evidence of its popularity. Dr. Phillips gives within a volume of moderate size an adequate account of these subjects, and the book can safely be recommended to anyone desiring to find them all included under one cover. About half the book is devoted to diseases of the ear. Then follows an excellent description of the influence of general diseases upon the ear, nose, and throat, and the remainder is divided about equally between the nose and throat. The author states in his preface that it has been his "continued desire to thoroughly Americanize this volume." In this he has succeeded, though he refers freely to certain British textbooks, especially that of Parker. The result is that some of his teaching differs materially from that accepted in this country. For example, in the treatment of intrinsic laryngeal cancer thyrotomy only receives the barest mention, and laryngectomy is strongly advocated for the majority of cases. The operation is described at great length. The pessimism of the author, too, on the subject of extrinsic cancer of the larynx, grave as that disease may be, scarcely does credit to the achievements of modern surgery. One of the greatest merits of the book is the excellence and profusion of the illustrations. It is also singularly free from misprints and slips of the pen. Herzog, referred to on page 427, is presumably Heryng, and the descriptions of the illustrations of recurrent laryngeal nerve paralysis on page 809 require correction. In spite of the abundance of textbooks on these subjects, the present edition will without doubt hold the place that previous editions won.

[5] *Consultations Oto-Rhino-Laryngologiques du Praticien.* Par Georges Portmann. Préface du Professeur Moure. Paris: Gaston Doin. 1923. (Pp. iii + 259; 38 figures. Fr. 14.)

[6] *Diseases of the Ear, Nose and Throat: Medical and Surgical.* By W. C. Phillips, M.D. Sixth revised edition. Philadelphia: F. A. Davis Company. 1922. (Med. 8vo, pp. xix + 881; 572 figures. 8 dollars net.)

NOTES ON BOOKS.

IN her small handbook, *The Writing of Medical Papers*,[7] Mrs. MELLISH has epitomized, for the benefit of others, some of her experience as editor of the Mayo Clinic publications. Her purpose is "to help untrained and partly trained writers to prepare for publication articles that will convey information with brevity, accuracy, and clearness, and adhere to the accepted forms of present-day usage." The work consists of twenty short chapters, a very full list of standard abbreviations for the names of medical periodicals, and a comprehensive index. Each chapter closes with a few clear-cut dogmatic sentences, giving the gist of what has gone before. Thus the teaching of Chapter XIV on the choice and arrangement of references is summed up in four sensible rules which we could wish written over the mantelpiece of every one of our contributors:

"Verify all references; be positive that they are complete and accurate.
"Index all articles when reading or abstracting.
"Refer to original articles. Do not give references from previous references.
"If an abstract is referred to, state the fact that it is an abstract."

The author's own advice is reinforced by a great many quotations, and in particular by liberal extracts from the second edition of Sir Clifford Allbutt's *Notes on the Composition of Scientific Papers* (the third edition was reviewed in our issue of March 10th). All the quotations are printed in small type, and the author of each extract is indicated by a very small numeral corresponding with a bibliography at the end of the book. Where the extracts are long—and some of them occupy several pages—it is often difficult to be sure where one quotation ends and another begins; it would be much better, we think, to space out each piece of borrowed advice, and (at the risk of tiresome repetition) to show more plainly the source of each. Again, the first of Mrs. Mellish's five admirable maxims printed on page 114 is: "Be exact in copying quotations"; but has she quite lived up to that advice on page 52? These small criticisms apart, we find something to commend in almost every chapter. Some of the many "Don'ts" are, we should hope, unneeded by British practitioners, and a few of the typographical rules are at variance with English practice; but it is only natural that American usage should be observed in a book printed in Philadelphia.

The Rescue Man's Manual[8] is the title of a handy guide, by Mr. ARTHUR B. CLIFFORD, for those engaged in rescue work at collieries, irrespective of the apparatus to which they are accustomed. The author insists that there can be no real substitute for practical training, but he intends his book to fill the gaps in the intervals between the practices, which now take place only four times a year. Although it is not intended directly for them, medical practitioners in colliery districts will find this little book, which is clearly, simply written, of considerable interest.

[7] *The Writing of Medical Papers.* By Maud M. Mellish. Philadelphia and London: W. B. Saunders Company. 1922. (Fcap. 8vo, pp. 157. 7s. 6d. net.)

[8] *The Rescue Man's Manual.* Compiled by A. B. Clifford, M.S.M., with a foreword by the Right Hon. W. C. Bridgeman, Secretary for Mines. London: The Colliery Guardian Co., Ltd. 1922. (Demy 8vo, pp. 46; 7 figures. 1s.)

THE LAMENESS OF LORD BYRON.

AT the social meeting of the Royal Society of Medicine last week (March 21st) Dr. H. C. Cameron gave a short address on the mystery of Lord Byron's lameness. After some introductory remarks Dr. Cameron referred to the fact that while Byron was indifferent to charges of immorality and irreligion, it was far otherwise with regard to his physical disability. To his lameness Byron was exquisitely sensitive; he never for a moment forgot it, and it poisoned his whole life. In some autobiographical notes he tells how once, when he was a child, his mother in one of her fits of fury called him a lame brat, and how he quickly retorted "I was born so, mother." Three years before his death he wrote at Pisa his tragedy *The Deformed Transformed*; the first words of the play were the cry of the mother, "Out, hunchback," and again came the answer, "I was born so, mother."

It was commonly alleged during his lifetime that Byron had a club-foot, but it was, Dr. Cameron said, a curious circumstance that friends and enemies alike were uncertain as to which foot was deformed. Moore, his biographer, who knew him well; Galt, also his biographer, and companion on one of his Eastern tours; Lady Blessington, and the Countess Albrizzi, both great friends of his, never could make up their minds which foot was deformed. His boxing instructor, Gentleman Jackson, the pugilist, thought it was the left. His mother, writing to her sister-in-law about taking the opinion of John Hunter, stated definitely, "It is the right foot." Mrs. Leigh Hunt, who with her husband was for long Byron's guest, thought that the left foot was shrunken, but that it was not a club-foot.

Photograph showing two boots worn by Byron in boyhood; in the possession of Mr. John Murray, C.V.O. Reproduced by permission.

Sheldrake, an instrument maker and bone-setter in the Strand, affirmed that Byron, when in his 20th year, consulted him. In 1827–28 Sheldrake wrote a series of letters to the *Lancet*, and in one of these, published on September 20th, 1828, entitled "Lord Byron's Case," he gave drawings of what he alleged to be the cast of Byron's foot. It represents the left foot. The woodcuts, Dr. Cameron thought, were suspiciously like those which illustrated the article on club-foot in every textbook of the time. He rejected Sheldrake's evidence altogether. Stendhall and Hobhouse both said it was the right foot that was deformed, Countess Guiccioli that it was the left. These contradictory statements appear surprising if Byron really had, as was generally believed, a club-foot.

By the kindness, Dr. Cameron continued, of Mr. John Murray, the present head of the great firm which published all the poet's works, we have here to-night two surgical boots made for and worn by Byron as a boy. They are both for the right foot, but I would have you especially observe that they have been made for a foot which is both long and slender and which in no way resembles a club-foot. It is significant of the great interest which was taken in the question of Byron's lameness at the time that after his death the lasts on which his boots were made were thought suitable objects for exhibition in a public museum. Mrs. Wildman, whose husband had purchased Newstead Abbey from the poet, found them and sent them to the museum at Nottingham. There they were discovered after long search in 1897 by Mr. James Ward of that city, stowed away in a drawer with the original paper still attached to them:

Photograph of the lasts on which Byron's boots were made. Reproduced by permission of the Curator of the Nottingham Museum.

These are the lasts upon which Lord Byron's shoes were made by Mr. W. Swift of Southwell. The last pair made upon them was on May the seventh 1807.

Contributed by W. Jones, Southwell.
Stamped on last: CHAULK, Princes St., Drury Lane.
Stamped on the block: W. Swift.

And the plot begins to thicken—the lasts show feet which are symmetrical and well formed. By the kindness of the curators of the Nottingham Museum I am able to show them to you and to reproduce the photograph.

In 1858 Edward John Trelawny (then in his 66th year) published his book *Recollections of the Last Days of Shelley and Byron*. He had been the friend and companion of both, but Byron wrote prophetically that Trelawny could not tell the truth to save his life. In his book he described minutely the pains he took to satisfy his own unhealthy curiosity and that of the British public. Immediately after Byron's death Trelawny says he hurried to Missolonghi, where lay the embalmed body of the poet; watching over it he found Fletcher, the poet's valet. To get rid of him Trelawny feigned faintness and asked for a glass of water; when the faithful Fletcher had departed on the errand Trelawny hurried forward, drew back the black pall and the white shroud.

"I uncovered the Pilgrim's feet and was answered—the great mystery was solved. Both his feet were clubbed and his legs withered to the knee—the form and features of an Apollo, with the feet and legs of a sylvan satyr."

That, Dr. Cameron continued, was just what the public expected to hear and wanted to hear. But when Trelawny was an old man (in his 86th year) he republished his book with some additions and one striking alteration. We read again of the trick played upon the servant and of the uncovering of the feet, but this time Trelawny wrote:

"I uncovered the Pilgrim's feet and was answered—It was caused by the contraction of the back sinews which the doctors call tendon Achilles that prevented his heels touching on the ground and compelled him to walk on the fore part of his feet; except this defect his feet were perfect."

"I think that Trelawny as he drew near death and as he felt more and more the responsibility that was his as the sole survivor of the actors in the scenes he describes, could not go down to the grave with the lie unwithdrawn, and that he rewrote his book that he might ease his conscience."

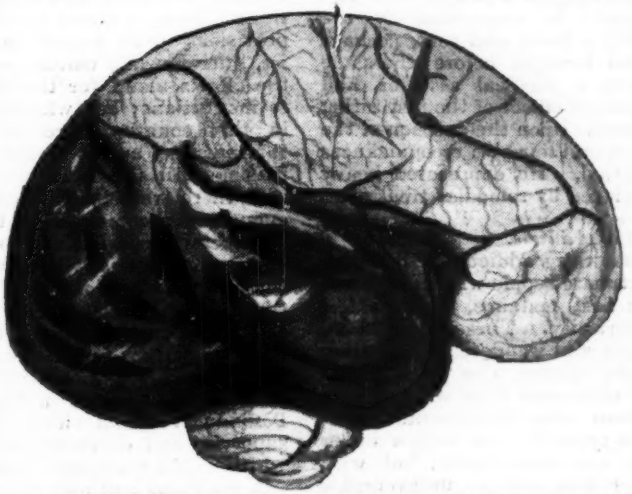
It was, Dr. Cameron went on to say, difficult to assess the degree of Byron's lameness; while all admitted the existence of a definite impediment, it was nevertheless clearly of slight degree and compatible with feats both of strength and endurance. It did not prevent him from playing cricket for Harrow against Eton on August 12th, 1805, though cricket, even an Eton *v.* Harrow match, was perhaps hardly the strenuous thing it has since become. It appears from Lillywhite's *Cricket Scores and Biographies of Celebrated Cricketers from 1745 to 1826* that Eton won by an innings and two runs. In the first innings Harrow made 55 and Eton 122. Harrow's second innings produced 65. Byron seems to have gone in seventh in both innings, making 7 in the first and 2 in the second. He was caught in both innings. Of the players in this match Lloyd, who was head of the school for that year, told Dean Merivale, who has repeated the statement in his *Recollections*, that "Byron played in that match and very badly too. He should never have been in the eleven if my counsel had been taken." "Caustic comment," Dr. Cameron observed, "from one who failed to score in either innings." In some manuscript reminiscences left by a schoolfellow (Shakespear) it is stated that "in a match of cricket played at Lord's ground Lord Byron insisted upon playing and was allowed a person to run for him, his lameness impeding him so much. Lord Stratford de Redcliffe as an old man used to recall how he had seen Byron playing in this match, "a moody-faced boy dismissed for a small score." Possibly the recollections of these old gentlemen were tinged with prejudice. A few days

after the match Byron wrote two letters to intimate friends from which it appeared that he had persuaded himself that he had made eighteen runs—he called them "notches"—"more than anyone except Ipswich." His swim across the Hellespont was, the lecturer said, too famous to make it necessary to say more than that Byron was in the water for one hour and ten minutes.

The concluding passages of Dr. Cameron's address were as follows:

THE NATURE OF LORD BYRON'S LAMENESS.

What, then, was the nature of this extraordinary lameness which was so elusive that one-half of mankind located it in the one foot and half in the other, which embittered the poet's whole life, which excited so much public interest, and which permitted such athletic success? Is it permitted a hundred years after the death scene at Missolonghi to attempt a diagnosis? In that long space of time we have learnt a great deal of the nature of injuries acquired by the infant at the moment of birth. Forty years after Byron's death Little, the great orthopaedic surgeon, introduced as a guest at a meeting of the London Obstetrical Society, read a paper, thereafter famous, in which he described a form of injury to the brain, occurring at birth, which results in a stiffness and awkwardness usually confined to the lower limbs. Because of delay in the establishment of respiration and of the consequent asphyxia a haemorrhage takes place over the area of the brain which presides over the voluntary movements of the legs. The gait of "Little's disease," as it has ever since been called, is stiff and awkward. At rest or during sleep nothing amiss is to be noted, but when a voluntary act such as walking is attempted the limbs are gripped in a kind of spasm. The knees tend to be pressed together and the body rises stiffly on the toes. Though progress may be slow the movement in each step is exaggerated, as though the sufferer were running in a curious stiff and jerky fashion. The feet and legs are, of course, well and normally formed, though during action the tendo Achillis may be prominent.



A brain showing meningeal haemorrhage; from an infant who lived twenty-six hours. Reproduced from the coloured plate illustrating Dr. Herbert Spencer's paper on Visceral Haemorrhages in Stillborn Children in the *Transactions of the Obstetrical Society of London*, vol. xxxiii (1891).

Trelawny alone attempts a detailed description of Byron's gait. It is such that it accords with the hypothesis of Little's disease and with no other. "During his brief and brilliant career in London it was noticed by his friends that to hide his lameness he always entered a room quickly, running rather than walking, and stopt himself by planting his left (the comparatively sound) foot on the ground and resting upon it. On the rare occasions on which he was seen walking in the streets, it was observed that he moved with a peculiar sliding gait rather than the easy lounge of a fashionable—in fact with the gait of a person walking on the balls and toes of his feet and doing his best to hide the singular mode of progression."

It is characteristic of Little's disease that the sufferer learns gradually to overcome his defect. The difficulty and awkwardness may remain to some extent throughout life, but by constant practice agility and control steadily improve when infancy and early childhood are past. In early childhood Byron was carried from doctor to doctor. He was treated in turn by John Hunter, Dr. Livingstone of Aberdeen, the celebrated Dr. Matthew Baillie, Dr. Laurie of St. Bartholomew's Close, as well as by the bone-setters Sheldrake of the Strand and Lavender of Nottingham. The treatment of the last named was so drastic that it came near not to curing but to causing permanent deformity.

The poet himself states frequently that his lameness was caused at his birth. Of the actual circumstances of his birth we know little. It took place, according to Hanson the family solicitor, in the back drawing-room of No. 16, later No. 24, Holles Street, Cavendish Square. He was born with a caul, which was purchased by Hanson and given to his brother, Captain Hanson, R.N. Perhaps because it was Byron's it brought none of its proverbial luck. Captain Hanson's ship went down with all hands off Newhaven two years later.

Finally, it may be noted that sufferers from Little's disease are prone to convulsive seizures like those of epilepsy, and that Byron, at least towards the end of his life, suffered repeatedly from such attacks.

I close by suggesting to you that we have found the solution of this mystery of Lord Byron's lameness which so excited the interest of our grandfathers, and found it in the back drawing-room of a little house which stood within a few yards of this hall, where one hundred and thirty-six years ago the baby Byron first, but too slowly, drew his breath.

THE PROBLEM OF DRUG ADDICTION.

DEBATE AT THE MEDICO-LEGAL SOCIETY.

LORD JUSTICE ATKIN presided over a meeting of the Medico-Legal Society on March 20th, when a paper was read by Dr. H. A. BURRIDGE, lecturer on forensic medicine and toxicology at King's College Hospital, on the subject of State effort to rescue drug victims, with special reference to the Dangerous Drugs Act.

British and American Practice.

Dr. BURRIDGE contrasted British and American methods of dealing with drug addicts. On this side of the Atlantic the American principle of correlating treatment with penal repression had not been followed, nor had there been sufficient survey of drug addiction before legislative enactment. Not only the medical but the legal mind in the United States regarded the drug addict as a sufferer rather than a criminal. He gave some figures to show the large extent of drug addiction in America.[1] Among other proofs, it was stated that in the Court of Special Session in New York County at least one-tenth of the business was concerned with drug addicts, and if offences which were really the result of drug addiction were included the proportion was much greater. In America any magistrate, on a complaint being made, might commit the drug addict to a State, county, or city hospital. Dr. Burridge cited particulars of some recent prosecutions in this country to illustrate the inequalities, injustices, and irrelevances of the English law, and he criticized several points in the Dangerous Drugs Regulations, particularly those relating to prescribing and to record-keeping by medical men. He regretted that those who initiated recent legislation and the proposed amending legislation should have caused confusion and created stumbling-blocks simply by their failure to take the general practitioner into counsel. This Dangerous Drugs Act seemed as if it might become known as the "Dangerous to Doctors Act," and half the members of the Medico-Legal Society might presently be employed in keeping the other half out of prison. He pleaded for the setting up of a proper advisory committee to thrash out the necessary amendments to the Act of 1920 as suggested by actual medical experience, and thus the sudden eruptions of fresh regulations at the instance of a Government department might be avoided. The American authorities (Dr. Burridge continued) had tackled the subject of treatment in a way to evoke admiration. The result of an official inquiry in the United States might be broadly stated as being (1) that there was no known specific remedy for drug addiction, and (2) that the cocaine habit more readily responded to treatment than the narcotic habit. The best results were obtained when the victim was in some kind of custody, not in prison, but in a controlled sanatorium. The American experts regarded heroin as the most dangerous drug in the category, especially because of its

[1] In an American White Paper lately issued the number of drug addicts in the United States is given as 1,388,600, their ages ranging from 12 to 75.

attractiveness to the young. The heroin habit was said to have grown to extremely large proportions in America, and the average age of its victims in the area covered by one inquiry was 22. Some experts contended that without injury to medicine this drug might be banished altogether. Dr. Burridge thought it of first importance, in approaching the question of treatment, to endeavour to discover the mental and moral condition of the addict. A person struggling alone to loosen the bonds of the drug habit was engaged in a task like that of Sisyphus himself. Until self-respect had been re-established there was no hope of cure. It was an absurdity if not a crime to commit these people to prison, where the last shreds of their self-respect would be lost. His suggestion was that they should be committed by the magistrate to a home, preferably a farm, and that, perhaps six weeks later, they should be brought before the same magistrate, who would sit with a medical assessor, and evidence would be given by a medical officer of the institution to which they had been committed. Upon the decision of the magistrate they could be released on their own recognizances or committed for a further period. He deprecated heavy fines and prison discipline, unrelieved by remedial treatment.

Classification of Addicts.

Sir WILLIAM WILLCOX said that drug addicts fell into two classes. The first were the unfortunate people who had become victims possibly owing, in the first instance, to a medical prescription or to their own curiosity. These people were intensely concerned at their state, and wandered about from one doctor to another, thereby giving rise to the impression that they were more numerous than was actually the case; many of them were originally mentally unstable. Any treatment of this type of case, unless under strict supervision and control, was quite futile, but with such safeguards the prognosis was not so unfavourable as was popularly supposed. Sir William Willcox suggested that there might be some kind of State certification of such persons, somewhat similar to that employed in the case of persons of unsound mind. Another class of drug addicts were degenerates who haunted disreputable resorts and lived on a succession of debased so-called pleasures. These cases were numerous, and were not often seen by medical men, but a lurid light was occasionally thrown upon their existence by some revelation in the police or coroners' courts. It was well to remember that the drug habit became really dangerous when the drug was taken hypodermically; it was less dangerous when taken by the mouth. He agreed that the regulations under the Dangerous Drugs Act were very irritating to the general practitioner, but he thought that they would be gradually revised in the light of experience and made more workable. Of course the underlying evil would never be countered until not merely the sale and distribution of the drugs but their production was under control.

Lord RIDDELL said that the clauses of the Dangerous Drugs and Poisons (Amendment) Bill now before Parliament appeared to be far too complicated and to impose an undue burden on the medical practitioner, but it would be the fault of the medical profession itself if it did not get the bill altered. The medical profession had only to say that these proposals were unworkable and they would not go through.

In some further brief discussion one or two speakers made the point already put forward in the leading article in the BRITISH MEDICAL JOURNAL of March 17th (p. 477), that in the Dangerous Drugs and Poisons (Amendment) Bill a discrimination was made between registered medical practitioners in actual practice and registered medical practitioners not in actual practice. It was argued that among the latter, strictly speaking, must be included medical officers of health and holders of other appointments.

Mr. PERRINS, of the Home Office, said that he had looked up the records in his department and had found that only seventeen addicts had been prosecuted since the Act came into force in 1921, and of these he did not think that more than six were sent to prison. Most of them were sent directly to a home, or were remanded for that purpose. The heavy penalties were reserved for the people who deliberately trafficked in drugs. With regard to the requirement that only doctors engaged in actual practice should be allowed to prescribe, this was inserted as a safeguard against those few members of the profession who were "down and out," having lost their practice for some reason, and who might try to make a living by prescribing for addicts. He spoke only as an individual, not as a representative of his department.

A Judicial View.

The PRESIDENT said that he believed the medical profession as a whole was deeply conscious of the evil involved in the drug traffic and sincerely anxious to do everything it could to mitigate that evil. He could not help thinking that the true way of setting to work was to trust medical practitioners, not to create difficulties in their path when they were engaged in the ordinary bona fide practice among their patients, but to provide for the most severe penalties upon doctors who evaded the provisions of the Act for the purpose of supplying drugs improperly to addicts or obtaining them improperly for themselves. If the medical profession agreed to this very proper line the authorities might be induced to modify some of the more irksome provisions with regard to dispensing and record-keeping. Dr. Burridge had chiefly praised in the American procedure the efforts made for the cure of addicts by sending them to institutions; but, whatever might be the case in America, in this country there were not enough institutions for this purpose, and it would be impossible to deal with this matter until the State in the first place had seen to it that there were institutions sufficient in number and large enough in accommodation to which the courts could in cases of necessity commit the persons who were brought before them and were proved to be addicts. This had not been a very popular form of procedure so far in this country, and he rather trembled at Sir William Willcox's suggestion that some such method might be adopted as was at present in force for certifying lunatics. Another Board of Control would be required, together with an elaborate system, involving dangers which might in the end defeat the object in view. Possibly it would suffice for the Ministry of Health to supervise and encourage the growth of private institutions, which might perhaps be assisted from public funds.

A good deal had been said (Lord Justice Atkin continued) in criticism of the nature of the regulations. He himself was not competent to deal with those criticisms, but it was a remarkable fact, and one which showed the tendency of modern legislation, that in the Dangerous Drugs Act, 1920, there should have been hardly any coercive provisions at all. That Act laid it down that regulations might be made, it was not definitely stated by whom, but there was a subsequent reference to the "Secretary of State," and the implication was that the regulations would be made by the Home Secretary. In the result the Home Office was left to make the whole of the regulations, infringement of which exposed the offender to the penalties prescribed by the Act. One would have thought that provision might have been made whereby the proposed regulations would be published in draft for criticism by the medical profession before they took final and effective shape. He contrasted some points in the regulations with what was proposed in the Dangerous Drugs and Poisons (Amendment) Bill, and urged the need for all such proposals to be placed before the medical profession. In the case of the bill the proposals could, of course, be examined and criticized before they became effective, but if he were a medical practitioner he would feel it a little alarming to be told that the Home Secretary had made certain regulations and that they would be published at a certain time, without knowing in advance what those regulations were, or without his profession as a whole having had the opportunity of seeing them and of submitting whatever was to be urged in respect of them: that might well be a genuine grievance. Those who had taken part in the proceedings in criminal courts would feel that the whole question was one of great importance. There the cases were usually brought forward on the charge of "being in possession." It was not a criminal offence to be an addict, but it was a criminal offence to be in possession of the drug, and this, of course, brought in the addict. In such cases the court would generally deal with the matter by using its powers to bind over the offender on certain terms or to put him under some kind of special probation, but there was a difficulty in committing any person compulsorily to any form of institution. That could only be done on the condition that the person concerned would be able to secure his release upon certain terms. When the case arose of a drug addict committing a crime, possibly owing to the deterioration which had taken place in his character, it could be dealt with more simply, and in some cases the most humane course was to treat it as ordinary crime, so as to secure that the offender was put in confinement in a prison for a reasonable period, during which, of course, he would not have access to the drug, while he would have competent medical treatment.

British Medical Journal.

SATURDAY, MARCH 31ST, 1923.

POST-GRADUATE EDUCATION IN LONDON.

THE present position with regard to facilities for post-graduate instruction in London is unsatisfactory; it seems, in fact, to have grown worse during the last eight or nine months. Before the war there had been established, mainly through the exertions of Sir William Osler and Dr. Hurst, a Post-Graduate Medical Association, which was to co-ordinate the scattered elements into an effective whole; later on the Fellowship of Medicine was formed, again with the help of Sir William Osler, to look after the social needs of medical visitors to London. The Fellowship of Medicine and the Post-Graduate Association were eventually combined into a single body, in which the identity of the latter was to a large extent lost.

When, in the winter of 1918–19, many medical officers of the Dominion and American armies, and of the British Territorial Force also, were being granted study leave the Fellowship of Medicine gallantly sprang into the breach and organized courses of which the medical officers mentioned showed their appreciation. The movement reached what the epidemiologists would call its "peak" in the very successful Special Clinical and Scientific Meeting of the British Medical Association held in London early in April, 1919.

Some time afterwards (in July, 1921) the Science Committee of the Association appointed a Post-Graduate Subcommittee. When it came to look into the matter it found that in Edinburgh and Glasgow post-graduate teaching had long been encouraged if not directly organized by the university. In Manchester, Birmingham, and Bristol the university medical faculty had taken the matter up, and Newcastle had a scheme of its own, countenanced by the medical faculty and worked through the North of England Branch. The Subcommittee therefore limited its investigation mainly to London. It saw that there were in London two post-graduate schools actually at work—the West London at Hammersmith and the North-East London at Tottenham—both, however, working independently of each other and of the university medical faculty. It learnt that the undergraduate schools, though in some instances organizing short courses for post-graduates and usually ready to welcome back an old student, were not willing to take graduates except under these special circumstances, and that in particular they did not cater for the foreigner. It knew also that many of the special hospitals were ready to receive a graduate, whether British or foreign, to attend their practice, and that some arranged special lectures and demonstrations. Finally, it had to consider the Fellowship of Medicine, which sought to be the central co-ordinating body, had arranged at various times a number of courses, and generally was anxious to give a helping hand to the medical stranger in London. The Subcommittee presented a report, upon consideration of which the opinion was reached that it was not necessary to establish a single post-graduate school and hospital, the view being, apparently, that the existing elements in London, if properly organized and combined, would provide what was wanted.

Of the Fellowship of Medicine and Post-Graduate Association it may be said that it had kept the need for a better organization of post-graduate education in London before the University, the Ministry of Health, and the medical profession. It was mainly owing to its efforts that in January, 1921, the then Minister of Health (Dr. Addison) appointed a departmental committee "to investigate the needs of medical practitioners and other graduates for further education in medicine in London." Over this committee the Earl of Athlone, Chairman of the Middlesex Hospital, presided, and it included two other laymen well known for their interest in hospital affairs; for the rest it consisted of members of the staffs of the teaching schools of the University and of representatives of the Ministry of Health. The Committee was instructed to submit proposals for a practical scheme, and in its report issued in May, 1921, it made a series of recommendations which, in fact, contained a scheme. A school attached to a hospital centrally situated in London was to be devoted solely to post-graduate medical education, and was to be a school of the University of London, receiving substantial financial assistance from the Treasury through the University Grants Committee. It was recommended also that, in addition to the courses provided at the central school and at existing post-graduate schools, further facilities for post-graduate study should be made available at non-teaching hospitals and at Poor Law infirmaries. Finally, the Athlone Committee advised that an Institute of State Medicine should be established; this has been realized through the Rockefeller Foundation's gift of £400,000 for the erection and equipment of such an institute, and the promise of the Minister of Health that the Treasury will provide £25,000 a year for upkeep. The Fellowship of Medicine accepted the recommendations of the Committee, and expressed the hope that one of the existing undergraduate teaching hospitals would consent to be the general hospital of the school and cease to take undergraduates.

As after a year or more nothing had been done, and as in the meantime a new Minister of Health had come into office, a deputation was sent to him last July to enlist his sympathy and support. Sir George Makins, who headed the deputation, described the aims and hopes of the Fellowship of Medicine, and recalled the recommendations of the Athlone Committee. The Chairman of the Post-Graduate Subcommittee was able to state that the British Medical Association was taking an interest in the movement, but did not think that a post-graduate general hospital was essential to the establishment of a post-graduate school in London. The Minister (Sir Alfred Mond) was sympathetic, but non-committal; he, however, seemed disposed to hold to the departmental committee's recommendation that a central general hospital was a necessary part of any complete scheme.

The Vice-Chancellor of the University of London (Mr. H. J. Waring) has informed the Fellowship that the University feels strongly the need for a post-graduate medical school, to consist of a central general hospital with approved special hospitals associated with it, and having a Dean who should be provided with the necessary clerical staff and administrative offices, not necessarily at the central hospital, but possibly, as we gather, in the University building when it goes to Bloomsbury. That the University should have taken the matter up is an important step forward, more especially as the University Grants Committee can only make grants to university institutions; but the difficulties in the way are very great, and it is to be feared that a long delay is inevitable. The Fellowship had to frame a policy for the immediate future; it decided to carry on, and called a conference, which was attended by representatives of

twenty-seven non-undergraduate hospitals "doing, or willing to do, post-graduate teaching." They asked, and the Fellowship agreed, that they should be added to its General Council; in reply to the further demand that they should be added to the executive committee, the Fellowship decided to take steps to modify its constitution, which is undoubtedly very cumbrous. Subsequently the twenty-seven constituted themselves a permanent "Post-Graduate Committee," and a conference is to take place shortly after Easter between representatives of this new committee and of the Fellowship. We hope that in some way a scheme to meet the immediate needs will be devised of such a kind that it will eventually work in with the larger university scheme which is designed to place the metropolis of the empire in the leading position it ought to occupy.

LORD BYRON'S LAMENESS.

IT is close upon a hundred years since the sixth Lord Byron ended his tempestuous career at Missolonghi, yet books are still written and papers read in which attempts are made to clear up the "mysteries" of his career, though without, it must be confessed, much success. Dr. Jeaffreson, who attempted to depict the "real Lord Byron," dealt, as others have done, with the moral and intellectual character of the poet. It is a strange fact that the physical "real Lord Byron" is equally a mystery in one respect. It is well known that he was lame, and that he was ashamed of and tried to conceal his lameness; but beyond this we cannot go without plunging into a labyrinth of contradiction. Were both of his feet affected, or only one? If only one, which one? What was the cause and what the nature of the deformity? These are some of the questions to which no satisfactory answers can be given. Lord Byron can have had little real happiness in his life, but we feel sure that his vanity would have been pleasantly excited and his latter days rendered happier could he have felt sure that for ninety-nine years, and probably for much longer, his poetry, his peccadilloes, and his deformity would be discussed again and again by the curious.

Trelawny and others said that he suffered from club-foot, but this term was formerly used to include all forms of talipes, and little stress can be laid on such statements. One more attempt to clear up one of the uncertainties about Byron has been made by Dr. H. C. Cameron, whose address to the Royal Society of Medicine, excellent both in matter and manner of delivery, is reported upon another page. In attributing the lameness to infantile spastic paraplegia, the result of injuries of the cerebrum received at birth, he has brought forward a theory which, as far as we know, is new. Dr. Cameron certainly makes out a good case, ingeniously supported on such evidence as exists, but he cannot be said to have quite proved it.

Apart from the fact that the victims of Little's disease are generally distinctly below the average in intellectual power, and that Lord Byron's intellect was certainly above the average, we have only Trelawny's word for it that both feet were affected and that Byron could only run on the tips of his toes, and Trelawny is certainly a most untrustworthy witness. It might be argued that the case was one of mild cerebral monoplegia, affecting one lower extremity, for the overwhelming balance of evidence goes to show that only one foot was affected. Three witnesses say that it was the right and six that it was the left foot, but anyone who has had much to do with such matters will admit that it is extremely easy to make mistakes in speaking or writing about right and left.

The exhibits presented by Dr. Cameron are most interesting, but, as he said, the bootmaker's lasts show no evidence of deformity. It is to Mr. William White, Sub-librarian of Trinity College, Cambridge, that we owe the discovery of these relics of the poet; in a paper in the *Cambridge Graphic* of February 22nd, 1902, he stated that it was owing to his repeated urging that they were discovered in an outhouse in the Nottingham Museum. In this paper Mr. White puts on record additional evidence about the affected foot, obtained from a resident in Cambridge who claimed to have seen Byron daily when he was at the university, and who noticed nothing peculiar about the feet. Mr. White also referred to an engraving in the library, copied from a silhouette cut by Mrs. Leigh Hunt, which "represents the feet exactly as Swift speaks of them, and underneath the likeness are the following words: 'His lame foot (the left) but slightly altered his general appearance.'"

The two examples of the appliances worn by Byron on his right leg, which Mr. Murray lent to the lecturer, are of the very greatest interest. They are of soft leather except the soles, which appear to be stiffened with metal plates, and, as will be seen from the photograph reproduced at page 564, each consists of a footpiece and an upper part extending to just below the knee, thickly padded as though to conceal atrophy of the calf. They conclusively prove that the right foot at any rate was affected, whatever may have been the condition of the left, and that the leg, and probably the foot also, was ill developed and much smaller than normal. The soles exactly correspond to the Nottingham lasts, and it would seem that they were made to be worn inside the boot or shoe, just as Hessing's and similar appliances are worn nowadays. The under surfaces of leather are not worn as they would be by contact with the ground. A striking feature in each of these two appliances is the wedge sole, by which the outer edge of the foot would have been raised a quarter or three-eighths of an inch more than the inner. Such soles are now used in cases of varus with the intention of throwing the foot outwards, but it is more likely that the maker of this appliance intended not to correct but merely to accommodate the over-pronated foot. If that were the case it would show that Byron suffered from valgus, which would be quite consistent with a long narrow foot, while varus is associated with a short broad foot such as could never have been fitted by these appliances or with boots made on the Nottingham lasts. If, as the lady quoted by Mr. White said, Byron rested his affected heel against the other foot, he must have had an everted and probably an over-pronated foot.

It must, we think, be considered as established that whatever the nature and cause of Byron's lameness, it did not result in any distortion of the foot that could not be concealed by ordinary shoes or boots. But that we have strong evidence that the condition was either congenital, or arose at the time of birth, we should have been disposed to attribute it to a mild attack of anterior poliomyelitis. In the circumstances the diagnosis must apparently be suspended between a cerebral monoplegia of the rare atrophic variety and a congenital talipes valgus or calcaneo-valgus. This latter condition, unlike talipes varus, is peculiarly apt to improve spontaneously. May it not be the case, then, that the newborn baby had a deformity sufficiently obvious to lead the mother to consult John Hunter and others, but which afterwards diminished till it constituted only the slight disability known to Byron's friends in adult life?

The question can never be definitely settled, and even an exhumation of the bones now in the grave at Hucknall Torkard would not be likely to clear up the uncertainty. Despite this, Dr. Cameron is to be congratulated on his

ingenuity and research, resulting in a most interesting address which held the rapt attention of his audience at the Social Evening of the Royal Society of Medicine.

CRIMINAL RESPONSIBILITY.

A COMPARISON of the Memorandum of the British Medical Association and the Report of the Medico-Psychological Association prepared for submission to Lord Justice Atkin's Committee on the practice and procedure relating to criminal trials in which the plea of insanity is raised* shows that, agreed as they are on several very important matters, there is an apparent discrepancy between them on what is perhaps the most important, the legal criteria of responsibility for crime. On careful reading of the two documents, however, this difference will be found to be more apparent than real, and to be due to the two committees not having consciously directed their minds to exactly the same point. Neither committee seems to have faced, or stated, quite clearly the conclusion to which its suggestions logically tend, and it is worth while trying, by a comparison of the two documents, to get this more definitely realized even though its practical application remain full of difficulty.

It is agreed that insanity is incapable of precise definition, but the question whether a person is or is not insane is a purely medical question. It may be very difficult to answer, and there may be differing medical opinions in this case as in others, but the whole matter is, we conceive, one of medical diagnosis. The questions as to whether an insane person should ever be punished by law for antisocial offences, and, if so, under what circumstances the penalty should be imposed, are not medical questions at all. They must be left to the legislature or to the courts. There are codes under which insanity, of and by itself, exempts the convicted prisoner from the prescribed penalty of his crime; but when this is not so the question of insanity is clearly not determinant. What the court has to determine in these cases is not the medical question of insanity, but the non-medical question of responsibility, whether the accused be insane or no. As a matter of fact, there are cases in which the court has in effect declared responsibility by inflicting the full penalty, even when there was medically no doubt as to insanity, and others in which the court has in effect declared irresponsibility by not inflicting the ordinary penalty when it would have been impossible for insanity to be medically certified.

This position is recognized in the first recommendation of the committee of the Medico-Psychological Association, which declares that "the responsibility of a prisoner should be left as a question of fact to be determined by the jury on the merits of the particular case." This being so, it might have been expected that the recommendation as to questions to be put to the jury would have been—(*a*) Did the prisoner commit the act alleged? (*b*) If he did, was he at the time responsible? leaving them to be answered solely on the evidence as to all the relevant facts "unhampered," as the body of the report says, "by any formula." The second recommendation of the committee, however, states that the second question should still be, "If he did, was he at the time insane?" and poses a third question to the jury in such form as in effect, so it seems to us, to establish a new criterion of responsibility—"that his crime was unrelated to his mental disorder."

Both committees are agreed that the M'Naghten rules should be abrogated, since the conception of unsoundness of mind implied in them is now obsolete. The British Medical Association Memorandum seems to imply, without saying it in so many words, that the question "Is he insane?" must still be asked of the jury, and puts forward as a substitute for the M'Naghten rules another formula which differs from those rules by adding a further criterion of irresponsibility—namely, that the accused "is prevented either by defective mental power or by disease affecting the mind . . . from controlling his own conduct, unless the absence of the power of control is the direct and immediate consequence of his own default." This is, nevertheless, suggested somewhat hesitatingly, as one which "might be accepted by the medical profession as fair."

It is certainly imperative that the rules as they now stand should be abrogated or ignored; it does not appear to be established that the jury ought to be asked to declare insanity; it may fairly be argued that what they have to determine is responsibility. If the question of insanity is omitted, then the essential thing is to have a proper body of medical evidence regarding all relevant medical and psychological facts upon which the jury may come to a decision in each case. If the question of insanity is still to be put to the jury, and if in that event it is considered legitimate to ask the medical profession to help by advising as to criteria of responsibility, it will probably be found less difficult in most cases to determine that mental disorder prevents the prisoner from controlling his own conduct than that his crime was unrelated to his mental disorder at all.

The matter is very far from being settled, and we put forward these observations as an attempt to make the points at issue plain to readers who have not hitherto had occasion to give much thought to the subject. Lord Justice Atkin's Committee is now engaged in taking medical evidence, and we can only at present express the hope that the Committee's report will give a clear lead to the judicature.

* See BRITISH MEDICAL JOURNAL, March 24th, 1923, pp. 518 and 523.

A HOSPITAL "MAINTENANCE" SYSTEM.

WE published last week (p. 532) a notice of a financial reconstruction scheme for Scottish voluntary hospitals which Sir George Beatson, consulting surgeon to the Glasgow Western Infirmary, has recently issued in a pamphlet. He has given the name "maintenance system" to the scheme he enunciates. Briefly, it may be said that he divides the cost of hospitals into two parts—the maintenance of the hospital itself, and the maintenance of the patients. He proposes that the expenditure on the hospitals shall still be met by the contributions of the charitable public, but that the patients should pay, either personally or through benefit societies, for their food, drugs, and dressings. The sum so to be provided by or for the patients he estimates would, in Scotland, average about £1 a week. The interest now felt in the financial position of hospitals is so widespread that any suggestion from a hospital worker of such long and varied experience as Sir George Beatson is sure to command attention. There are some points in his scheme which may be felt to need further explanation. He states that voluntary hospitals no longer confine themselves to the field of work for which they were established—the care of the necessitous sick poor—but are meeting the needs of other sections of the community, such as artisans and members of the lower middle class. Sir George Beatson points out that voluntary hospitals have now to meet a much higher expenditure, especially on the surgical side, than in the past. What, then, it may be asked, is exactly meant by the term "necessitous poor"? The ordinary primary meaning of "necessitous" given in the *New English Dictionary* is "placed or living in a condition of necessity or poverty; having little or nothing to support oneself by; poor, needy; hard up." But this, in the circumstances, does not help us very much. Does ability to pay £1 a week under an insurance scheme requiring the payment of a few pence a week remove

the individual from the ranks of the necessitous poor? Or, taking the other extreme, does inability to afford the cost of a surgical operation and a nursing home bring the patient within the class? Again, is a person legally a pauper to be included in the necessitous class? Sir George Beatson agrees that an "income limit" must be enforced by a voluntary hospital, but it is admittedly not easy to fix the measure of this limit. We understand Sir George Beatson to include in the maintenance of the hospital itself, besides buildings and rent and taxes, the expenditure on salaries and the running expenses in drugs, dressings, etc., of the out-door dispensary, as well as the cost of management. We gather that he would assign to the patients' side of the account the cost of wear and tear of eqtipment for serving food, and the surgical dressings. It will, we suspect, be difficult to make a sharp distinction between the two headings of expenditure for maintenance of hospitals and expenditure on maintenance of patients. Sir George Beatson's scheme must be considered in its relation to the present hospital policy of the British Medical Association. He says that a "definite advantage of the maintenance system is that under it there will be no grounds for medical men claiming remuneration for the services they render, because the hospitals will be receiving no payment for treatment." The Association proposes that in the event of patients paying in part or in whole the hospital maintenance fees, either individually or by some contributory method, or with the addition of rate or State aid, or a combination of any two or more of these methods, a percentage of all such payments should be passed into the staff fund. At the Annual Representative Meeting last year a resolution was adopted affirming that where such payments are in part made by rate aid or State aid, or in other cases are of an amount exceeding the cost of hospital maintenance and accommodation, such charges should be considered to include payment towards maintenance and treatment, and a percentage of all such payments should be passed into a fund to be at the disposal of the honorary medical staff. This resolution, along with certain others, was referred to the Council, which, at its meeting on October 25th, 1922, adopted a memorandum which has been circulated to the Divisions and was published in the SUPPLEMENT on November 18th (p. 186). Sir George Beatson's scheme is not in accord with that contained in the memorandum, but the views he expresses are ingenious and stimulating and therefore worthy of study.

A NEW THEORY OF MINERS' NYSTAGMUS.

AT a meeting last week of the South Wales Institute of Engineers a paper was read by Dr. Frederick Robson[1] in which he presented some observations upon the prevalence of miners' nystagmus in the South Wales coalfields. He gave a general survey of these coalfields to explain the influence of the metamorphoses of coal, with special reference to the production of volatile bodies and their distribution horizontally and perpendicularly (by pits). There is a considerable difference in the percentages of volatile content of coals in the adjacent areas, and Dr. Robson states that it is in direct relation with the incidence of nystagmus amongst the miners. Monmouthshire, with a volatile content of the coal of 29.50 per cent., gave 4.56 per cent. of nystagmus amongst men employed below ground; Glamorganshire East, with 29.50, showed 2.22 per cent. of nystagmus; Glamorganshire West, with 25.50 per cent., showed 1.90 per cent. of nystagmus; and Carmarthen, with 11.86 per cent., showed 1.15 per cent. of nystagmus. The statistics, he maintains, appear to show "a partial parallel analogy in the incidence of nystagmus to percentage of volatile matter, as disclosed by analysis of the various seams passing from east to west and from south to north." When these seams are examined in these directions it is found that the coal is progressively less bituminized. The coals are, however, not homogeneous, so that difficulties arise in establishing the exact relation of the statistics. It is, however, a striking observation that in Monmouthshire, where the percentage of volatile content is nearly twice that in Glamorganshire (whole county), the nystagmus is more than double that found in the less volatile coal fields. Dr. Illingworth, who has been associated with Dr. Robson in this work, states that coal of a bituminous kind gives rise to dust at the face by "geological" attrition, which oxidizes readily at pit temperature, with the formation of carbon monoxide gas. The inference that a gas or gases is the generic cause of nystagmus is held to be supported by strong presumptive evidence. So far as is known the blood content of miners working in the most gassy mines has not been investigated, and it is suggested that this should be done. Negative evidence against the usual theory of defective lighting as the cause of nystagmus is contained in a series of observations made in the Rhondda Valley over a series of years (1909 to 1920). There have been two peaks of high incidence of nystagmus, the one in 1914 and the other in 1920. During this period there has been a steady increase in the use of electric lamps; they were introduced in 1913; last year 60,000 lamps were in use, and there has been an equivalent reduction in the use of locked oil lamps. The number of men increased in each of the two years of the peaks of incidence of the nystagmus, but the men's working time has been reduced, and wages have increased, both factors which should reduce the risks of the disease if the actual coal cutting were the primary cause. Against this there has been an increase of compensation, from £1 to 25 shillings a week in 1917, and to 35 shillings in 1920; this may have conduced to the more general reporting of cases. The author concludes that "it is obvious that coal getting *per se* is not the main cause of nystagmus." Further, he states that it takes twenty years underground in the hard coal areas to produce a nystagmic patient, whereas in the soft coal or bituminous pits, as in Monmouthshire, nystagmus may be contracted in two years. Dr. Robson is collaborating with Professor George Knox and Dr. S. Roy Illingworth, of the Treforest School of Mines, in an examination of coal dusts and mine gases in selected pits, as far as they may relate to the origin of nystagmus. It is proposed to correlate their results with Dr. Robson's in order to prove or disprove his hypothesis that coals give rise to different percentages of nystagmus in some ratio to their volatile content, the volatile content being an index of the kind of coal giving rise to the disorder. The results of this combined inquiry will be awaited with interest.

[1] *Miners' Nystagmus.* By Frederick Robson, M.D. South Wales Institute of Engineers, Park Place, Cardiff, 1923, pp. 97.

THE PROGRESS OF CREMATION.

IT was reported at the annual meeting of the Cremation Society of England, held on March 21st, that the number of cremations in Great Britain in 1922 was 2,009, an increase of 87 on the figure for the previous year, although slightly below the highest total for a year, which was reached in 1919. The total number of cremations since the first in 1885 is 27,429, and of these nearly one-half have taken place at Golders Green. It was only to be expected that attention should be drawn in support of cremation propaganda to the recent exploration of the tomb of Tut-ankh-Amen; it served to point the moral that the disturbance of the dead for purposes less scientific and more basely utilitarian than those of the archaeologist is taking place all the time, with the requisitioning of burying grounds for street widenings or railway extensions or other improvements. The urban cemetery is by no means the place of uninvaded sanctity and rest which is pictured in Gray's "Elegy," and such disturbance is inevitable, for, as Sir John Simon remarked sixty years ago, every dead body receives its accommodation at the expense of the living and to their detriment. To the objection to cremation that it would sometimes enable crime to be successfully concealed, the Council in the annual report points out that the several exhumations lately necessary might have been prevented had the same precautions of strict inquiry into the cause of death been taken before burial as are taken in the case of a body which it is proposed to cremate. It is the lax burial system—not the practice of cremation—which offers facilities for

concealment, and the probability is that a larger number of crimes escape detection on account of this laxity than are brought to light by exhuming the body. Sir Malcolm Morris presided over the annual meeting, when the Duke of Bedford was re-elected President, and certain formal business was transacted consequent upon the recent reconstitution and incorporation of the Society. Occasion was taken to mention the progress of cremation in other countries, especially in Sweden, where a propagandist effort is being made by the Swedish Cremation Union during the Jubilee Exhibition at Gothenburg in the coming summer. The head of the committee in charge of the work is Dr. Veener von Heidenstam, Fellow of the Royal Swedish Academy, and the necessary funds for organizing the effort are being supplied by the Swedish Government and the municipalities of Stockholm and other cities, as well as by organizations specially interested in the cause of cremation.

INDUSTRIAL PSYCHOLOGY.

THE second anniversary meeting of the National Institute of Industrial Psychology was held last week in the rooms of the Royal Society. The Earl of Balfour, in moving a resolution calling for support for the Institute, said that in spite of the great services rendered by British scientists, the value of the work which science could do for society had been underrated in this country. This was due partly to the rightful zest for pure science which animated the scientific mind; if men of science were not interested in the abstract and non-utilitarian aspects of their work science itself would languish and be near its doom. But science could intervene to more purpose in industry, greatly to the advantage of the State. One means of intervention was through the physical and chemical sciences, whereby discoveries were turned into inventions. Even in this obvious application a great deal of apathy still existed which made him anxious for the future of British industry. Another task of science in industry was to protect the workman from the diseases and accidents incidental to his calling. A third was industrial psychology, and here, whatever might be said of other applications of science to industrial work, there could be no collision between employer and worker. The primary object of industrial psychology was to make the labours of the wage-earner easier, smoother, more pleasurable, and more productive. Intelligent investigation and experiment could do much to elicit the true laws which ought to govern physical effort. What Bacon described as the object of science—"the relief of man's estate"—could not be pursued on safer, sounder, and less controversial lines than those which the Institute had adopted. Sir Charles Sherrington, P.R.S., also spoke on the great variety of problems which had been already undertaken by the Institute, such as the study of miners' movements in coal getting, rest pauses in catering work, and the simplification of packing in the factory. Forty years ago psychology was modestly invading the universities as a laboratory subject, but for some years it had hardly a laboratory to call its own. It occupied itself at first in exact time measurements of repetition processes, and went on to study the factors of attention, memorization, mental fatigue, interest, monotony, anxiety, and other emotional states. Every modern process of industry involved perhaps thousands of operations, each one depending on a mental situation, with favourable or unfavourable elements. In the modifications of these processes, as well as in vocational selection and the study of the predilections and disabilities of individuals, industrial psychology was proving its worth. Other speakers were Sir Lynden Macassey, K.C., Mr. Arthur Pugh, of the Iron and Steel Trades Federation, and Dr. C. S. Myers, the Director of the Institute. Dr. Myers said that the experience of the Institute was that deficient output was due less to intentional restriction than to bodily and mental conflicts with environment. The investigators from the Institute had found labour intensely interested in the possibilities of affording better guidance, based on proper tests, to those deciding on the operations for which they were best fitted. It was the employer, who asked for immediate results, or for a guarantee of an extra percentage of profit, who needed educating in industrial psychology. The Institute had undertaken some investigations on illumination in a Lancashire coal-mine. The result of substituting diffused for undiffused light at the coal face had been an appreciable increase of output of coal, and the new lamps giving greater brightness of illumination could not be supplied fast enough to the colliers, who stated that the lamps had made the work easier and involved far less strain on the eyesight. Another piece of work had been the study of breakages in a tea-shop. Here improvements in methods of ventilation, devices for screening the workers from excessive heat, and the reduction of danger points of irritation and fatigue had resulted in a diminution of 53 per cent. in the number of breakages.

RADIOLOGY IN PRACTICE.

MR. C. THURSTAN HOLLAND, D.L., Ch.M., has been appointed honorary consulting radiologist to the Royal Infirmary, Liverpool. This recognition of his distinction as a radiologist will, we believe, give great pleasure to his brother radiologists and to all members of the profession who know the excellence of his work. He was one of the first to take up the study of the practical application of x rays in diagnosis and treatment. He pursued it in a true scientific spirit, and on this account his influence on the development of medical radiology has been, and we hope will long continue to be, very great. He has steadfastly maintained the thesis that radiology for diagnosis or treatment should be conducted by members of the medical profession themselves, and that it is the duty of the radiologist not only to take good plates but to interpret them, the radiologist having his part to play, and a very important one it is, in the diagnosis of any case in which his co-operation is invited. Mr. Thurstan Holland, by his character no less than by his skill, enjoys to the full the confidence of all members of the profession who are associated with him in clinical work, and that he commands the respect of the members of his own specialty is shown among many other evidences by the fact that he has been selected to give the Silvanus Thompson lecture of the Roentgen Society on May 1st.

THE King and Queen have promised to lay the foundation stone of the new Rockefeller building of University College on some day towards the end of May. On the same occasion they will open the anatomy buildings of University College, which are nearing completion.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Dangerous Drugs and Poisons (Amendment) Bill.

Amendments in Standing Committee.

THE Dangerous Drugs and Poisons (Amendment) Bill was taken in Standing Committee B in the Commons on March 26th, Mr. Arthur Ponsonby presiding.

The proceedings were very brief, occupying less than half an hour. All the amendments on the notice paper, with the exception of two (of no importance and not proceeded with), were in the name of the Home Secretary and they were all agreed to. It was understood that this was the result of arrangements between Mr. Bridgeman, on behalf of the Government, and the medical group, university members, and the British Medical Association. The full text of the bill was given in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL of February 24th (p. 59), from which it will be seen how the amendments apply. In Clause 2, at the end of the subsection dealing with fines and their disposal, the following amendment was inserted:

> (2A) No proceedings for an indictable offence against this Act shall in England or Wales be instituted except by or with the consent of the Attorney-General or by the Director of Public Prosecutions, and no person shall, on conviction for any offence of contravening or failing to comply with any regulation under this Act relating to the keeping of books or the issuing or dispensing of prescriptions containing drugs to which this Act applies, be sentenced to imprisonment without the option of a fine or to pay a fine exceeding fifty pounds, if the court dealing with the case is satisfied that the offence was

committed through inadvertence and was not preparatory to or committed in the course of or in connexion with the commission or intended commission of any other offence against this Act.

In Subsection (2) of Clause 2 Mr. Bridgeman submitted a verbal amendment of definition to leave out the words "an attempt" and insert "attempting or soliciting or inciting another person."

In Clause 3, which deals with the sales to medical practitioners, dentists, and veterinary surgeons, Mr. Bridgeman proposed to leave out the words "*in actual practice*" after the words "*where the purchaser is a registered medical practitioner*," thus conceding the main point urged in an article in the BRITISH MEDICAL JOURNAL of March 17th (p. 477).

On inquiry from Mr. Hayday as to the reason for such a change, Sir Sydney Russell-Wells said that the words "in actual practice" had an extremely technical meaning. Unless they were left out medical officers of health and other registered practitioners would not come within the benefit oft he modification. Dr. F. E. Fremantle added that supposing a Member of Parliament were taken suddenly ill in that room and a medical member was ready to prescribe for him, there would be a barrier unless this change were made.

In Clause 3 at the end of Subsection (2) the Home Secretary proposed the following amendment:

> Provided that if a seller is reasonably satisfied that a registered medical practitioner desiring to purchase a poison urgently requires it for the purpose of his profession, but is, by reason of some emergency, unable before delivery either to furnish to the seller an order in writing duly signed, or to attend and sign the book, the seller may send the poison to the purchaser to be handed over to him either in exchange for such an order or on an undertaking by the purchaser to furnish such an order to the seller within the twenty-four hours next following.
>
> If any purchaser by whom any such undertaking as aforesaid has been given fails to deliver to the seller a signed order in accordance with the undertaking, or if any person for the purpose of obtaining delivery of any poison under the foregoing proviso makes a statement which is to his knowledge false, he shall be deemed to have procured the commission of an offence under the said section seventeen.

Mr. Bridgeman explained that this amendment was introduced at the instance of the medical members of the House to enable doctors, when emergency arose, to avoid loss of time in getting their prescriptions acted upon.

The next amendment proposed by the Home Secretary was submitted at the instance of the Pharmaceutical Society. It is an additional clause, and runs as follows:

> (1) Where any poison to which section seventeen of The Pharmacy Act, 1868, applies is supplied on and in accordance with a written prescription given by a registered medical practitioner under and in accordance with the provisions of the Acts relating to national health insurance, the seller of the poison shall not be required to make any entry in the book in accordance with the requirements of the said section.
>
> (2) The said section seventeen shall have effect as if for the words "labelled with the name of the article and the word poison, and with the name and address of the seller of the poison," there were substituted the words "labelled with the name and address of the seller of the poison, with the word 'poison;' and with the name of the poison, and, in the case of a preparation which contains a poison as one of the ingredients thereof, with such particulars as to the proportion which the poison contained in the preparation bears to the other ingredients as may be prescribed by Order in Council."

Dr. Fremantle, as chairman of the Medical Committee in the House of Commons, said they were very much obliged to the Home Secretary for the way in which he had met the representations made to him in the public interest and not merely in the interests of the medical profession. Long-standing difficulties would be removed by this bill as amended. The Home Secretary thanked the medical and pharmaceutical members who had been good enough to meet him and to go very fairly and fully into this matter. He should be very sorry indeed if he had seemed to cast any slur on the medical profession by any provision under this bill. He was sure the profession would render him the support they could, which would be of extreme value in putting down this horrible traffic.

The Spahlinger Treatment.—Dr. Watts, on March 21st, asked if any investigation had been made by the Ministry of Health as to the value of the Spahlinger treatment for tuberculosis; if so, the nature of the reports received; and if not, whether steps would be taken at the earliest possible date for a thorough investigation such as had already been made by the United States and other foreign Governments. Mr. Chamberlain replied that all the evidence available as to the value of this treatment had been investigated by his department. One of the medical officers of the Ministry visited Geneva last year, and, through the courtesy of M. Spahlinger, was enabled to examine certain cases of tuberculosis which had been treated by this method. The conclusions arrived at were that although it was not yet possible to express an opinion upon the scientific value of M. Spahlinger's work from the bacteriological standpoint, the clinical results already obtained fully warranted further investigation as soon as a supply of the complete serum and vaccine was available. It was understood that no definite date could yet be fixed by M. Spahlinger for the production of a further supply even for the purposes of scientific investigation. Mr. Chamberlain added he was most anxious to encourage further trial of the remedies in this country under expert observation as soon as a supply was available. Dr. Watts asked if Mr. Chamberlain was aware that the lives of many people suffering from tuberculosis had already been saved by the use of this serum? Mr. Chamberlain said that so far as the Ministry had been able to test the results they appeared to be very satisfactory, but it had not yet been able to get sufficient data to enable it to come to a final conclusion. Lieut.-Commander Astbury inquired whether, if he brought under the notice of the Minister several cases which had been cured entirely by the Spahlinger treatment, he would give further consideration to the matter. Mr. Chamberlain thought that the honourable member could not have listened to the reply. There was no supply of serum available at present. Lieut.-Commander Astbury asked if the Minister was aware that M. Spahlinger was practically ruined by the cost of this serum, and that he had no further funds to go on with in order to produce more. The Speaker, interposing, said that the matter could not be debated by question and answer.

Morphine and Heroin.—In reply to Captain J. Hay, who asked a question (March 22nd) as to the amount of morphine and heroin manufactured in Great Britain in 1921, the amount exported, and inquired what became of the balance remaining in the country, Mr. Bridgeman replied that the returns furnished to the Home Office were as follows: Morphine manufactured, 147,790 oz.; exported, 77,354 oz. Heroin manufactured, 12,285 oz.; exported, 14,107 oz. To obtain the balance remaining and used in the country during the year the stocks in hand at the beginning of the year would have to be added to the amount manufactured. There were no figures to show these amounts, but, apart from any supplies obtained illicitly in contravention of the Dangerous Drugs Act, the balance would be disposed for medical and scientific purposes through the wholesale or retail dealers licensed or authorized under the Act.

The Merchant Shipping Amendment Bill.—The bill to amend the Merchant Shipping Acts, 1894 to 1906, so far as they relate to venereal disease, introduced by Sir John Collie on February 16th, has now been printed. The bill is backed by Sir William Raeburn, ex-president of the Chamber of Shipping of the United Kingdom, Sir Alfred Mond, Mr. Tillett, Sir George Berry, and other members. Under the existing law a sailor who is suffering from venereal disease at a foreign port has his pay stopped; he must pay for his own maintenance and treatment in hospital, and later has to find his way home at his own expense. The bill proposes to provide for the free treatment and conveyance from foreign ports of distressed British seamen suffering from venereal disease. The object of the bill is to prevent concealment, neglect of treatment, and the spread of infection.

Insurance.—Major McKenzie Wood, on March 21st, asked the Minister of Health as to the proposal for a new arrangement with the doctors to take the place of the present agreement, which expires at the end of this year. Mr. Chamberlain declined to make any statement, and added that he could not at present say at what date he would be able to do so. Dr. Watts inquired whether the Minister was aware that under the present agreement many doctors were expected to be on duty twenty-four hours a day, and seven days a week. In reply to an inquiry by Mr. W. Graham on the same day as to the conditions which would determine the title of members of approved societies to participate in schemes for additional national health insurance benefits following the second valuation by the Government actuary, when the conditions would be published, and whether the approved societies would be consulted. Mr. Chamberlain said the matter was under consideration, and the views of approved societies of various types were being obtained, including those of the associations of approved societies and the National Conference of Friendly Societies.

Answers in Brief.

The Minister of Health is considering whether it is possible to take any effective action with regard to an advertisement entitled "The Milk Industry" published by the National Federation of Dairymen's Associations, offering for sale materials and machinery for the manufacture of reconstituted milk the sale of which was prohibited by the Milk and Dairies Act of last year.

The Under Secretary of State for War has stated that eleven medical officers are employed at the War Office, but none is doing ordinary secretarial work.

Mr. Chamberlain has stated that 135 local authorities out of 145 had submitted schemes under the Blind Persons Act, 1920, and that 5 others have schemes under consideration.

Mr. Chamberlain has said that he is advised that there was no definite evidence that disease was spread by mouthpieces of telephones. As the result of bacteriological inquiries made in this country and abroad some two years ago, it was held that the transmission of pulmonary tuberculosis through the medium of the telephone mouthpiece was practically impossible. In any event the disinfection of telephone mouthpieces after each individual user would be impracticable.

[In order to find space for the report of the important proceedings in Standing Committee which resulted in drastic amendment of the Dangerous Drugs and Poisons (Amendment) Bill, we are compelled to hold over a part of our Parliamentary Notes this week.]

England and Wales.

POST-GRADUATE WORK IN BIRMINGHAM.

THE Clinical Board of the University of Birmingham has arranged a course of post-graduate demonstrations to be given at the General Hospital, Birmingham, on Tuesdays, from 3.30 to 5 p.m., during April, May, and June. The board believes that such practical demonstrations will prove of great value and will be appreciated by members of the profession residing within reach of Birmingham. The course, which will be given by members of the medical and surgical staffs, will include demonstrations on skin disorders, nervous disorders, surgery, diseases of the heart and of the nose and throat, on chronic arthritis and its treatment, on the methods of investigating diseases of the stomach, on diabetes, on nephritis, and on common deformities of the feet. An advertisement appears in another place, but we may say that the first demonstration will be given on April 17th. The fee for the course is one guinea, and full particulars can be obtained from the clerk to the Clinical Board, the University, Edmund Street, Birmingham.

"ASYLUM" OR "MENTAL HOSPITAL."

A question of nomenclature is raised by the visiting committee of the City of London Mental Hospital, Stone, near Dartford, in its annual report for 1922. For many years past, it says, to meet the objections raised by the friends of patients to the description of that institution as the "City of London Asylum" the words "City of London Mental Hospital" have been substituted. The committee is, however, advised that for all legal and official purposes it is bound by the description "asylum" laid down in the Lunacy Acts. This inevitably leads to inconvenience and confusion, and the committee recommends that steps should be taken by the City Corporation to get a clause inserted in the next General Powers Bill authorizing the use of the gentler expression in describing the institution for all purposes. For some time there has been a feeling throughout the country that the description "asylum" should be dropped in connexion with institutions for the treatment of the mentally afflicted.

Scotland.

POST-GRADUATE TEACHING IN GLASGOW.

UNDER the auspices of the Glasgow Post Graduate Medical Association arrangements have been made for the provision of post-graduate teaching for medical practitioners from May until October of this year. The teaching facilities are of two forms—clinical courses and clinical assistantships—and are designed to meet the needs of practitioners who wish to refresh their knowledge of one or more subjects, and at the same time to make provision for those who wish to spend a few months in the more intensive study of one particular subject. The courses are held in the different infirmaries and special hospitals of Glasgow, and the subjects include clinical medicine, clinical surgery, clinical obstetrics, clinical gynaecology, diseases of children, ophthalmology, diseases of the ear, throat, and nose, dermatology, urology, orthopaedics, venereal diseases, and several others. Most of the clinical courses extend over one or two months, on one, two, or (in a few cases) three days of each week; in ophthalmology an intensive course will be held daily throughout September. As regards clinical assistantships arrangements have been made whereby a limited number of practitioners can become attached to wards or out-patient departments under the direct supervision of the physician or surgeon in charge, and they will be able to take advantage of the facilities for intimate study of the cases, carrying out detailed investigations as directed. These clinical assistantships are, in most instances, available not only during the coming summer, but throughout the whole year; they provide exceptional opportunities for those who are able to devote the necessary time to the work—either the whole or part of the day—and are intended to appeal especially to young graduates who contemplate practising in some special subject, and to practitioners from overseas who wish to become acquainted with the most modern methods of diagnosis and treatment. Further information may be obtained on application to the secretary, Glasgow Post-Graduate Medical Association, the University, Glasgow.

Ireland.

DUBLIN INFANT AID SOCIETY.

THE report presented to the annual meeting of the Infant Aid Society, at which Sir William Wheeler, President of the Royal College of Surgeons in Ireland, was in the chair, stated that during 1922 the amount of relief distributed was 12,767 gallons of free milk, at a cost of £1,190 7s. 5d.; 6,758 gallons of milk sold at a reduced price, £616 4s.; 4,629 free dinners, £51 13s. 7d.; 369 lb. free dried milk, £29 3s. 6d.; and 435 lb. dried milk sold at a reduced price, £34 7s. 9d. There were 47 bags of coal and 804 garments also distributed. All this relief was distributed on the advice of voluntary visitors of the society, who undertook to visit and care for a year the destitute mothers and infants recommended by the nurse of the district. The total number of visits paid by these voluntary visitors during the year was 9,996, an increase of 3,553 on the previous year.

The report expressed appreciation of the good work done by the five nurses and health visitors of the society, who with the eight nurses of the Central Babes' Club Committee, visited all the poor families within the city. The total number of visits paid by the five nurses and health visitors was 31,233, an increase of 1,178 on the previous year. The workers of the society paid 41,299 visits, a total increase of 4,731. The visitors had very often to act as counsellors and friends of the mothers and fathers. There was great poverty in the city, and unemployment seemed to be as great as it was last year. The times were abnormal, and the series of shootings and explosions which had occurred in the city for the past eight months or so must have affected the health of the mothers and their babies. The treatment of delicate babies and expectant mothers formed an essential part in the work of the society. During the year 363 infants had received hospital treatment through the society, which was greatly assisted by the help it received from the National Maternity Hospital, Holles Street, St. Ultan's Hospital, the Children's Hospital, Temple Street, the Children's Hospital, Harcourt Street, the Orthopaedic Hospital, Richmond Hospital, Linden and Stillorgan Convalescent Homes, and the Children's Holiday Home, Cheeverstown. The report also expressed indebtedness to the Sick and Indigent Roomkeepers' Society, the Society of St. Vincent de Paul, the Dublin Corporation, the Albert College Farm, Glasnevin, and the Cowkeepers' Association, for supplying milk at a reduced price; the Local Government Board, the Irish White Cross, the Ada Lewis Distress Fund, the Rev. Mother, St. Vincent's Hospital, the Dominican Convents, Eccles Street and Muckross Park, the Provincial, All Hallowes College, for free milk, and to many other helpers and subscribers. The adoption of the report was moved by Mr. McArdle, who said that the strength of a nation lay with the children. The chairman, in putting the motion, which was carried unanimously, said that their storm-tossed vessel in Ireland would have to be repaired by the children growing up. In all questions of health, and in all questions of the support of hospitals, Ireland was far behind other countries in Europe and behind the United States. In the areas in Dublin where the Infant Aid Society was working the mortality amongst children had been considerably reduced. Dr. Reginald White, the President of the society, to whose energy a great deal of its success was due, had reminded him that the normal mortality in Dublin amongst infant children was 160 per 1,000—an appalling state of affairs—but that in a district where the Infant Aid Society was active it fell to 110—a very considerable reduction.

TUBERCULOSIS IN CO. ARMAGH.

In his annual report Dr. Robinson, tuberculosis officer for co. Armagh, states that during the past year twenty-one new cases received dispensary treatment and nine sanatorium treatment. With reference to the inquiry of the Ministry of Labour as to the relative value of the various forms of treatment he states that he had no doubt that if the patient came under observation in the early stage—which, unfortunately, did not often happen—and was willing to submit to medical advice, residence in the sanatorium was the best, for not only would the disease be arrested but he would be taught much that would be of service to him when he returned home. In 1922 the number of deaths was 26, as against 248 in 1913, the first year of the working of the scheme. Though the number of deaths from pulmonary tuberculosis was smaller

he thought there was very little doubt that a large number of deaths from "other forms" was due to milk infection, and showed the necessity for a thorough testing and inspection of the milk supply. The number of deaths from the pulmonary type could also be reduced if a comprehensive building scheme were adopted. Larger and better houses were required. In the long run a healthy A1 population was of more benefit to the State than a B2 population. It was not unusual for him to find a patient suffering from advanced pulmonary tuberculosis occupying the same bed with two or three others. Dr. Robinson remarks, in conclusion, that the treatment of tuberculosis is not so hopeless as some imagine. Several patients who were under his care years ago are at present enjoying good health and at their ordinary work.

Correspondence.

THE CONGRESS OF MEDICINE IN VIENNA.

SIR,—The Congress for Internal Medicine to be held in Vienna from April 9th to 12th is not in the true sense of the word an international one, but the authorities have always welcomed the participation of foreigners on an equal basis. Personally I believe that true international congresses are impossible at present, but these local meetings, where outsiders are welcomed, form the best method, in my opinion, for the resumption of international relations. Vienna is peculiarly adapted at the present moment for this purpose, because Professor Wenckebach, who came from Holland to take up this important position in Vienna, is well known to many English physicians and scientists.

The notice has been issued too late for most of us to be able to attend, but it is possible that this may catch the eye of some younger men who would be free to undertake the journey.—I am, etc.,

London, W., March 20th. HENRY HEAD.

*** The fact that the congress was to be held was mentioned in our columns of March 17th (p. 491). The Austrian Legation (18, Belgrave Square, S.W.1) now states that visitors from the United Kingdom will be particularly welcome and everything will be done to facilitate their journey to and stay in Austria, that the cost of the journey has been specially reduced, and that full information can be obtained on application to the Legation.

SKIN RASHES FROM DYED FUR.

SIR,—Apropos of Dr. Semon's note in the JOURNAL of March 17th (p. 467) I had, some considerable time ago, corroboration of his diagnosis. I reported to Messrs. Nobel's Explosives Co. on a possible claim for compensation, in the case of a gelatin worker who had been certified by her medical attendant to be suffering from "dermatitis due to chemica's."

On examination the worker did not show actual dermatitis, but a blotchy erythema of neck and chin, with urticarial swelling of eyelids. She was not exposed in her occupation to any nitro body that would give rise to such a condition, and her hands, which were chiefly involved in her work, were free from any inflammatory condition. Inquiry as to hair washes, face pomades, powders for complexion, photographic material, petrol and paraffin, and soaps yielded negative results. A feature was that on a Saturday she had been certified by her medical attendant as having recovered, and after two hours' work on the Monday following the face was so inflamed that the ambulance attendant at the factory sent her home.

The food, occupation, and clothing of the Sunday were considered. A mustard-coloured, cheap felt hat was inspected, and showed at the curled-up brim behind a dark smudge. The worker explained that this came from a new fur she had bought. The fur was then inspected. By wetting a prescription form and rubbing same on surface of fur a brown smudge was obtained. The lining was unpicked and a smudge was obtained by rubbing a moistened paper on the pelt. The distribution, the freedom of the hands from eruption, and the fact that the appearance of the eruption was not suggestive of nitro-body rash, were sufficient to warrant a report that the condition was due to the fur wrap.

The worker returned to work and ceased wearing the fur and had no further trouble. The reappearance of the eruption on the Monday is due to the fact that, whatever the dye is, it is one which is more irritant in presence of moisture.

The urticarial condition favours the impression that the dye is an arsenical compound.—I am, etc.,

Stevenston, Ayrshire, March 17th. HARRY M. ROBERTS.

HAEMOCLASIC CRISIS AS A TEST OF HEPATIC INSUFFICIENCY.

SIR,—Dr. Langdon Brown, in his most interesting lecture in the BRITISH MEDICAL JOURNAL of March 17th (p. 461), on laboratory tests in disease of liver and pancreas, quotes the above test as a sign of hepatic insufficiency. The main points of the test are the post-prandial leucopenia, fall in blood pressure, alteration in viscosity of blood, and the explanation was the entering into the systemic circulation of improperly metabolized protein, said to be due to insufficiency of the liver.

Müller, in an article entitled "New glimpses into the regulation of vascular tonus" in the *Jahreskurse für Aerztliche Fortbildung* (January, 1923), gives an entirely different interpretation of this reaction, showing that it is evidence of a vagotonic state, and that identically similar reactions can be obtained from the intracutaneous injections of various non-specific substances. The article seems to me to be very convincing, being supported by authoritative references and experiments all through. I should like to know which of the two views is the correct one.—I am, etc.,

Darlington, March 19th. R. CHALMERS.

HOSPITAL POLICY.

SIR,—In the JOURNAL of March 24th (p. 538) Dr. Fothergill states that if the staff of a voluntary hospital is paid for its services it follows that the members of the board of management must also be paid; this is an argument that has frequently been used, but for which I can see no foundation. Members of the boards of management of many institutions where the staff is paid, such as asylums, sanatoriums, and infectious diseases hospitals, do their work voluntarily as part of their public duties; indeed, I know of no such institution where they are paid. Moreover, the position of a member of a board of management is entirely different from that of a member of the medical staff; the former is not giving the services of his particular profession or business by which he makes his living, as is the latter; auditors, solicitors, architects, and other professional men whose special services are required by the hospitals are for the most part paid.—I am, etc.,

Bradford-on-Avon, March 24th. CHAS. E. S. FLEMMING.

SIR,—The correspondence in the JOURNAL on hospital policy is of much interest, though one could wish that there were a greater variety of writers so that a wider scope might be given to the discussion. Up till now it appears that there has been chiefly the reiteration of opinions by a few correspondents.

One point I would like to make. In letters in the issues for March 17th and 24th there have appeared statements to the effect that the policy of the Association will bring about the aggregation of all or nearly all the consulting and specialist work for contributory schemes within the voluntary hospitals. Such a statement as this shows that the writers of the letters have not refreshed their memories of the resolutions passed at the Annual Representative Meeting, 1922. The fear which they have in their minds is expressly guarded against in the Association policy. At the meeting of the Marylebone Division[1] when the application of Dr. Gordon Dill's contributory scheme to London was under discussion I pointed out that a serious danger, for London at any rate, arose from the risk that consultations and specialist services for the patients accepted under such schemes might tend to be limited to hospital staffs, and that measures must be taken to prevent this. Later the Hospitals Committee, the Council, a general conference of hospital staffs, and finally the Annual Representative Meeting, accepted two resolutions which are designed to prevent such a happening. They are as follows:

Para. 28. Where arrangements for consultations or specialist services for tariff patients are made under some contributory scheme or otherwise, such arrangements should provide that these services shall be given so far as is possible and consistent with the best interests of the patients by the private practitioner at his consulting rooms or at the patient's own home and not at the out-patient department of the voluntary hospital.

Para. 31. Full opportunity should be given to private practitioners who possess the necessary qualifications and experience to participate in the work of voluntary hospitals, and for that purpose—

(*a*) The age limit or tenure of office of members of the honorary medical staffs of voluntary hospitals should, where necessary, be so modified as to allow more and younger practitioners to obtain responsible hospital experience.

[1] SUPPLEMENT, BRITISH MEDICAL JOURNAL, November 25th, 1922, p. 232.

(*b*) Greatly increased facilities should be provided for the appointment of clinical and chief clinical assistants to the various departments of the larger hospitals.

(*c*) When the number of patients of voluntary hospitals increases the medical staff of all grades should be increased.

(*d*) In considering the eligibility of a practitioner for one of these appointments, the points which would afford indications to which due regard should be given are one or more of the following:

(i) Special academic or post-graduate study, if combined with some evidence of actual practice of the specialty;

(ii) Tenure of hospital and other appointments affording special opportunities for acquiring experience; and

(iii) Local professional recognition of competence in a consultative or expert capacity.

If it be thought that these resolutions are not sufficient statements of policy, pray let us hear wherein they are defective, so that there may be suitable amendments. For my own part I think that they are effective. Paragraph 28 is a key resolution and one that every member of the profession in considering proposed contributory schemes should insist upon being adopted.—I am, etc.,

London, W., March 24th. N. BISHOP HARMAN.

THE RIGHTS OF A REGISTERED MEDICAL PRACTITIONER.

SIR,—Surely the fact of a medical man signing a medical certificate is a proof that he is "in the actual practice of the medical profession"? He would hardly sign the certificate until after he had examined the patient, which in itself is an *act of practice*.

Will anyone say when is a doctor not a doctor?—I am, etc.,

Wimbledon, March 24th. FREDERIC VICARS, M.D.Brux.

Universities and Colleges.

UNIVERSITY OF OXFORD.

Radcliffe Travelling Fellowship.—The Master and Fellows of University College announce that, on the report of the examiners, the trustees have elected Maurice Elgie Shaw, B.M., B.Ch., M.A., New College (and Guy's Hospital), to a Radcliffe Travelling Fellowship of £300 a year, for two years.

Radcliffe Prize.—The Master and Fellows of University College have, on the report of the judges, awarded the Radcliffe Prize, 1923, to Arthur Duncan Gardner, D.M., University College, F.R.C.S., formerly Radcliffe Travelling Fellow in the University, for his researches in medical science.

At a congregation held on March 24th the degree of Bachelor of Medicine (B.M.) was conferred on Martin O. Raven, Trinity College.

UNIVERSITY OF DURHAM.

THE honorary degree of D.C.L. will be conferred, at the June convocation, upon Sir Anthony A. Bowlby, K.C.B., K.C.M.G., K.C.V.O., Surgeon-in-Ordinary to the King, and President of the Royal College of Surgeons of England.

The following candidates have been approved at the examination indicated:

THIRD M.B., B.S.—E. F. H. Bell, A. H. F. Cole, J. Davis, W. H. Denholm, J. F. Hedley, J. Henderson, Gwendolen Jones, W. G. S. Pepper, Florence M. Smith.

UNIVERSITY OF MANCHESTER.

The Death of Sir William Thorburn.

THE following resolution was passed by the University Council at its last meeting:

"The Council have heard with deep regret of the death of Sir William Thorburn, Professor Emeritus in the University. They desire to record their sense of his great services as an administrator, a teacher, and an investigator, his eminence as a surgeon, and the whole-hearted devotion with which he sacrificed himself in the service of his country. His sterling integrity of character inspired respect in all his colleagues and students. The Council desire to convey to his relatives their profound sympathy with them in their loss."

The following appointments have been made:—Clinical Lecturer in Infectious Diseases: D. S. Sutherland, M.D.Glasg. Honorary Clinical Lecturer in Tuberculosis: R. Marsden, M.D., D.P.H. Manch., M.R.C.S., M.R.C.P.

The County Borough of Wigan has renewed its annual grant of £250 to the university.

Dickinson Research Travelling Scholarship.

Applications for the Dickinson Research Travelling Scholarship in Medicine, value £300 and tenable for one year, are invited by the trustees of the fund. Candidates must have graduated with distinction at the University of Manchester in medicine and surgery in one of the three academic years immediately preceding the award. Copies of the regulations governing the scholarship can be obtained from Mr. F. G. Hazell, Secretary of the Trustees, Manchester Royal Infirmary, to whom six copies of applications should be sent not later than May 1st, 1923.

The following candidates have been approved at the examination indicated:

D.P.H.—*Part I:* Ada Furniss, R. M. Galloway, S. Kelly, B.L. Lloyd, Hilda Pratt, Effie Ratner, Gladys J. C. Russell. *Part II:* G. V. Ashcroft.

UNIVERSITY OF BRISTOL.

THE following appointments have been made:—Demonstrator in Obstetrics: Dr. R. S. S. Statham. Clinical Lecturer in Obstetrics: Mr. H. J. D. Smythe, M.B., M.S., F.R.C.S. Teacher of Physio-Therapy: Mr. P. E. Christofferson, M.B., Ch.B.

UNIVERSITY OF EDINBURGH.

THE Senatus of the University of Edinburgh resolved on March 22nd to offer the honorary degree of Doctor of Laws to, among others, Dr. Henry Head, consulting physician to the London Hospital, and Lieut.-Colonel Sir Charles Henry Bedford, I.M.S.(ret.).

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

Re-election of President.

AN extraordinary Comitia of the Royal College of Physicians of London was held on Monday, March 26th, at 5 p.m., the President, Sir Humphry Rolleston, being in the chair.

The President delivered the annual address, in which he reviewed the work of the College during the past year. He pointed out that there were now 368 Fellows, compared with 83 one hundred years ago; that there were now 600 Members, and that a century ago there were only 216. There were now 14,448 Licentiates and Extra-licentiates. He then gave obituary notes of the 10 Fellows who had died during the past year—namely, Dr. Robert Shingleton Smith of Bristol, Sir Henry Davy of Exeter, Dr. W. H. R. Rivers, Sir Edward Malins of Birmingham, Dr. Arthur Ransome, Dr. Cornelius Benjamin Fox, Sir James Galloway, Sir Norman Moore, Dr. J. J. Pringle, and Dr. Norman Dalton.

The thanks of the College were accorded to the President, on the motion of Sir William Church.

The College then proceeded to the election of President for the ensuing year, and Sir Humphry Rolleston was re-elected, receiving 61 votes out of 65.

The College authorized the presentation of an illuminated address to H.R.H. the Prince of Wales, President of St. Bartholomew's Hospital, at the celebration of the 800th anniversary of the foundation of the hospital.

After the transaction of some formal business the President dissolved the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

CONSTITUTION OF THE COUNCIL.

THE composition of the Council since July, 1922, is as follows:

President.—Sir Anthony A. Bowlby, K.C.B., K.C.M.G., K.C.V.O. Council (1) 1904, (2) 1912, (3) 1920; Pres. 1920.

Vice-Presidents.—Sir D'Arcy Power, K.B.E., C. (1) 1912, (2) 1920; Sir Berkeley G. A. Moynihan, Bt., C.B., K.C.M.G., C. (1) 1912 (substitute), (2) 1919.

Other Members of Council.—Sir Charters J. Symonds, K.B.E., C.B., C. (1) 1907, (2) 1915; Mr. W. F. Haslam, C. (1) 1908, (2) 1916; Sir Charles A. Ballance, K.C.M.G., C.B., M.V.O., C. (1) 1910, (2) 1914, (3) 1922; Sir J. Bland-Sutton, C. (1) 1910, (2) 1918; Mr. H. J. Waring, C. (1) 1913, (2) 1921; Sir William Thorburn, K.B.E., C.B., C.M.G., C. (1) 1914, (2) 1922 (deceased); Sir Charles Ryall, C.B.E., C. (1) 1914 (substitute), (2) 1915 (deceased); Mr. Walter G. Spencer, O.B.E., C. (1) 1915 (substitute), (?) 1918; Mr. F. F. Burghard, C.B., C. (1) 1915 (substitute), (2) 1921; Sir Herbert F. Waterhouse, C. 1915; Mr. T. H. Openshaw, C.B., C.M.G., C. 1916; Mr. Raymond Johnson, O.B.E., C. 1916; Mr. V. Warren Low, C.B., C. (1) 1916 (substitute), (2) 1917; Mr. J. Sherren, C.B.E., C. 1917; Sir J. Lynn-Thomas, K.B.E., C.B., C.M.G., C. 1918 (substitute till 1926); Mr. E. W. Hey Groves, C. 1918; Sir Cuthbert S. Wallace, K.C.M.G., C.B., C. 1919; Mr. F. J. Steward, C. 1920; Mr. W. Thelwall Thomas, M.B.E., C. 1921; Mr. C. H. Fagge, 1921; Mr. R. Pugh Rowlands, 1922.

The medical schools are represented as follows:

London:	
St. Bartholomew's	3
Charing Cross	1
Guy's	4
King's College	1
London	2
Middlesex	1
St. Mary's	1
St. Thomas's	2
University College	1
Westminster	1
Special London Hospital	1*
Total London	13
Provincial:	
Birmingham	1
Bristol	1
Cardiff	1
Leeds	1
Liverpool	1
Manchester	1*
Total Provinces	6
Total Council	19

* Deceased.

Obituary.

THE LATE SIR WILLIAM THORBURN.

TRIBUTES TO HIS MEMORY.

DR. JUDSON BURY, consulting physician to the Manchester Royal Infirmary, writes:

As an old friend and colleague of the late Sir William Thorburn I feel I must say a few words in appreciation of his ability, his scientific work, and his personal character. The greatness of his natural ability was shown by the prizes and scholarships he took during his university career, by the clearness of diction and excellent quality of his speeches and writings, and by his business capacity and powers of organization, which, for example, were conspicuous in the undertakings concerned with the construction of the new Royal Infirmary.

It is often difficult to form a just estimate of the work of a colleague who has recently passed away, and perhaps especially difficult when that colleague was a friend, but in Thorburn's case the difficulty is small, for the high value of his scientific work, particularly that bearing on spinal localization, has been long and widely recognized; moreover, the conclusions which he drew from his investigations have proved to be accurate and worthy of a permanent place in medical literature. These investigations involved detailed observations on the extent of the paralysis and anaesthesia in cases of injuries and diseases of the spinal cord, and subsequently in determining the exact site of the *post-mortem* lesions. As the result of a large number of such investigations Thorburn was able to work out the precise distribution of the various nerve roots, and he was probably the first to do so in this way—that is, by the correlation of clinical and pathological observations. These investigations were carried out about thirty-five years ago and were set out in a book published in 1889. At that time I was closely associated with Thorburn in clinical work at the Manchester Royal Infirmary, and can testify to the care with which he recorded his observations, to his caution in avoiding bias, and above all to the honesty with which he stated the results of his findings. Honesty is the prevailing note in all Thorburn's published work; for example, no one can read his recent Bradshaw lecture on the surgery of the spinal cord without being convinced that he has avoided laying stress on instances of success and has honestly given his experience of medullary surgery over a large number of years.

Photograph by] SIR WILLIAM THORBURN. *[Schmidt, Manchester.*

As regards personal character, it is painful to reflect that it rarely seems fitting to tell our dearest friends how much we respect and admire them, and that such feelings can only be fully expressed after our friends have been taken from us. Thorburn was a true and loyal friend, and, although at times there was a certain aloofness in his conversation and manner, his friends knew that this was but a cover for a generous spirit and a kind, unselfish disposition. I am inclined to think that honesty and courage were the two most prominent features of his character. Surely no man was ever more sorely stricken. The loss of his three sons and the quite recent death of his wife were terrible blows, but Thorburn, deeply wounded, still held on to courage. As Sir J. M. Barrie said in his rectorial address at St. Andrews University last year, "Courage is the thing. All goes if courage goes."

> "Fight on, my men, says Sir Andrew Barton.
> I am hurt, but I am not slaine;
> I'll lie me down and bleed awhile,
> And then I'll rise and fight againe."

I firmly believe that Thorburn retained his courage to the last and greeted the unseen, if not with a cheer, at least with equanimity. Thorburn's work will live: his honesty, courage, and kindly feelings will abide in the memory of his friends.

We are indebted to Dr. DONALD E. CORE, lecturer in neurology, University of Manchester, for the following tribute:

I read with pride and interest your summary of Sir William Thorburn's life in your last issue, and the appreciations of his friends, Dr. Judson Bury and Mr. Howson Ray. I myself knew Sir William throughout the whole of my life, and I benefited so largely from his professional skill and his teaching that I would like to add my own slight tribute to his personality and professional genius. I attended his classes from 1902 to 1905, and by this time his reputation in neurological surgery was unassailable in Manchester. It was taken so much for granted that many of us possibly failed to realize the greatness and thoroughness of his work in this direction, but his overwhelming personality was over us all, and whatever subject he touched upon he invested with an air of exactness and finality that was one of his chief characteristics. Few of us who were attending the Royal Infirmary in these years will have forgotten his lecture courses on diseases of the gall bladder and their treatment, and the wonderful series of lectures he gave on diseases of bones. Every subject he touched he coloured with his own dominant personality. His most striking teaching was probably that at the bedside; he had wonderful facility in summarizing the essentials of any case he was dealing with, and there was no student in his class but could follow with ease his clear-cut arguments and logical conclusion. He was not a man who played for popularity among students, and the prevailing feeling among us was, perhaps, one rather of admiration mixed with awe than anything else. He carried this aloofness with him always, and, however well one felt one knew him, there was an equal impression that the real Thorburn was very far off. As senior resident at the Infirmary in 1912 I again came into close contact with him; I was then warded in one of his beds with a severe septic infection of the tendons in the forearm and hand, and I remember with a gratitude I cannot express the intense pains Sir William took in dealing with what turned out to be a very tedious case, visiting me frequently as many as three times a day for incisions and movements of the affected fingers. The recognition of the practically perfect hand which resulted is, I think, the greatest tribute that I can pay to him. I saw much of him during the war, for at the end of 1914 he established the neurological section of the 2nd Western General Hospital, the section that I was intimately concerned with, and the working of which brought me into

frequent contact with Sir William. At this period he was more concerned with the organization of work and with broad generalizations, yet I do not think he ever showed himself to greater advantage than in his dealings with these cases at this time; at this time, also, he was suffering severely from his own personal bereavements. After the war I knew him as a colleague on the staff of the Royal Infirmary, and another side of his complex character dominated. Questions of hospital policy and details of medical administration received the same attention as in earlier days had been expended upon the cutaneous distribution of spinal segments, or the clinical aspects of the cervical rib, and were left again in the same state of completeness.

It became more and more obvious during these latter years that Sir William's interests were turning in the direction of medical politics, and his untimely death has been a blow to all of us, his students and his colleagues, who felt that he might one day have filled with distinction the presidential chair of the Royal College of Surgeons. Sir William was, I should say, by nature a very nervous and a very self-conscious man, and his aloofness and somewhat terrifying personality were of the nature of over-compensation in the opposite direction. Such men are not always sufficient for themselves, but it is among them, often enough, that the best workers are found.

A special service was held on March 21st at the Manchester Cathedral, which was filled by a large congregation, medical and lay women as well as men, who attended to pay their last respects to a friend and fellow worker or trusted adviser. The Royal College of Surgeons of England was represented by Sir Berkeley Moynihan and Mr. Thelwall Thomas; the University of Manchester by Professors H. B. Dixon, J. Shaw Dunn, J. S. B. Stopford, T. F. Tout, and R. B. Wild; the University of Liverpool by its vice-chancellor, Dr. Adami; the Army Medical Service by Colonel F. H. Westmacott; and the Manchester Medical Society by Sir William Milligan. The Board of Management of the Manchester Royal Infirmary, the Medico-Ethical Association, the old Owensian Society, and the St. Andrews Society of Manchester were also represented. Very many members of the staff of the Manchester Royal Infirmary were present, and also representatives of the nurses, as well as many personal friends in the profession. The interment took place afterwards at the Manchester Southern Cemetery.

A slight correction has to be made in the notice published last week. Sir William Thorburn had three sons: one died in 1910, one died in China in June, 1914, and Lieutenant F. E. Thorburn was killed in Gallipoli.

Dr. J. LLEWELLYN REES of Pontardawe died on March 4th, aged 58. He was the son of the late Rev. William Rees, vicar of Llanboidy, was educated at Llandovery and at the London Hospital Medical College, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1888. After serving as clinical assistant to out-patients and in the skin department of the London Hospital, medical officer to the Provident Dispensary, Bethnal Green, and as senior resident surgeon to the Royal Sea-Bathing Hospital, Margate, he succeeded Dr. Grice Jones in practice at Pontardawe some twenty-three years ago. He was medical officer to the Pontardawe and District Fever Hospital at Gellynudd since its opening. Dr. Rees, who was a member of the Swansea Division of the British Medical Association, was a keen sportsman, and well known as a Rugby footballer in his hospital days. He is survived by two sons and two daughters.

We regret to announce the death of Dr. H. W. MCCAULLY HAYES of Madras. He was educated at the University of Edinburgh, took the Scottish triple qualification in 1887, and became M.R.C.P.Edin. the following year. He also took the Diploma in Public Health of the University of Liverpool in 1909, and four years later the Diploma in Tropical Medicine at the University of London. After serving as surgeon to the Victoria Hospital, Swindon, he became medical officer of the South Indian Railway, where he gained the respect of all with whom he came in contact, and was particularly popular in the social life of Trichinopoly, where the headquarters of the railway are situated. Owing to the depletion of South India of its I.M.S. officers in consequence of the war, Dr. Hayes's services were requisitioned by the Government, and he was appointed to act as superintendent of the Madras Lunatic Asylum, in the work of which institution he showed great interest, especially in regard to the welfare of the inmates. Dr. Hayes was honorary treasurer of the South Indian and Madras Branch of the British Medical Association, and was lieutenant-colonel in the Indian Defence Force Medical Department.

The death of Sir ERNEST CLARKE calls for at least passing notice here. He was born in 1856, and at an early age became a clerk in the Medical Department of the Local Government Board. He was a man of unusual ability and energy, possessed by the ambition commonly associated with these qualities, and that department then afforded little scope; he left it in 1891 for the Stock Exchange clearing house, and afterwards, in 1887, became secretary of the Royal Agricultural Society. He was the first incumbent of the office of Lecturer on Agricultural History at Cambridge (1896–99). Owing to a mistaken policy for which Clarke was in part held responsible, he retired from the service of the Royal Agricultural Society in 1905 and had not since held any public appointment. During the eighties he was an assiduous and valued contributor to this JOURNAL. It is difficult, even for those who lived through it, to put the mind back to the state of things in public health at that time. The awakening had begun, and the British Medical Association, through its old Public Health Committee, and its JOURNAL, then edited by Ernest Hart, with Clarke as one of his most trusted advisers, did much to stimulate public opinion to demand better things. A great deal of the time and energy of medical men and of the space of this JOURNAL were occupied in arguing for propositions which are now commonplaces; big epidemics of typhoid fever were still common, tuberculosis was popularly regarded as a hereditary disease by which certain families were inevitably affected, the death rate was high, and the infant death rate still higher. Clarke whole-heartedly believed that these things could be mended, and worked ardently with the limited means open to him to end them. It was a characteristic example of English slowness to entertain new principles that means were not found to keep him in the central public health service. It was not the fault of the sorely tried medical department of that day.

Medical News.

THE Medical Research Council issued, on March 29th, a report entitled the *Schick Test, Diphtheria and Scarlet Fever* (H.M. Stationery Office, 1s. net), by Surgeon Commander Sheldon F. Dudley, R.N. The report is founded on a study of the incidence of diphtheria and scarlet fever in the Royal Naval School at Greenwich. The author has been able to differentiate between the invisible "epidemics of carriers" and "epidemics of immunization" on the one hand, and the visible epidemics of disease on the other. He concludes that the Schick test is a reliable method for ascertaining who are immune to diphtheria, and that the percentage of doubtful reactions can be reduced to two or three. We propose to refer more fully to this valuable report in our next issue.

THE arrangements of the Royal Institution for lectures after Easter include a course of four lectures by Sir Arthur Keith on the machinery of human evolution; the first of this course will be given on April 10th at 3 p.m. Two lectures, of which the first will be given on May 31st, will be delivered by Sir William M. Bayliss, on the nature of enzyme action; and among the Saturday afternoon lectures are two by Dr. Leonard Williams on the physical and physiological foundations of character, of which the first will be given on April 28th.

THE memorandum on the Dangerous Drugs Regulations prepared by the Home Secretary in conjunction with the Minister of Health and the Scottish Board of Health, which was reproduced in the JOURNAL on January 13th, 1923 (p. 69), has now been printed and put on sale. Copies may be obtained, price 2d. each, through any bookseller or direct from the Stationery Office at Imperial House, Kingsway, London, W.C.2, or the dépôts at Edinburgh, Manchester, and Cardiff.

ESSAYS for the Gifford Edmonds prize in ophthalmology awarded every two years for the best compilation on a subject dealing with ophthalmology and including original work, must be sent by December 31st, 1924; the subject selected for the next award is irido-cyclitis. Particulars of the prize can be obtained on application to the Secretary, Royal London Ophthalmic Hospital, City Road, E.C.1.

MR. STEPHEN PAGET has contributed an introduction to a book, *Medical Practice in Africa and the East*, which is about to be published by the Student Christian Movement. The book consists of a series of open letters on professional subjects from men and women doctors with many years' experience in India, China, or Africa.

THE Voluntary Hospitals Commission has now dealt with all the applications for grants in respect of 1921, except for a limited number of areas in Scotland in which Local Voluntary Hospital Committees were late in being established. The total deficits reported to the Commission amounted to £295,170 for London, £425,727 for the rest of England and Wales, and £15,340 for Scotland. The total deficits reported for the whole of Great Britain amounted to £736,237, as compared with the estimate of £1,000,000 by Lord Cave's Committee on which the Government grant of £500,000 was based. The following grants have now been made on the basis of pound for pound of new money raised or in sight, except in a limited number of cases in which emergency grants have been made to hospitals which had exhausted their realizable assets, and without assistance from the Commission would have been compelled to close beds: London, £225,000; England and Wales (excluding London), £194,242; Scotland, £5,741; total, £424,983. The London hospitals have received their full share of the grant, but a balance of £75,017 still remains for distribution in the rest of England, Wales, and Scotland. This balance has been apportioned on the basis of Lord Cave's estimate as follows: England and Wales, £45,758; Scotland, £29,259. The Local Voluntary Hospital Committees in England and Wales and the Consultative Committee in Scotland are being asked to formulate proposals, subject to the Treasury conditions, for the distribution of these balances towards the liquidation of the deficits which accumulated prior to 1921.

AN international congress of mental hygiene will be held in New York in April, 1924. The previous congress was held in June, 1922, in Paris, when twenty-two different nations were represented. Those wishing to join the congress should communicate with the general secretary, Dr. Genil-Perrin, 99, Avenue de la Bourdonnais, Paris.

DR. HUBERT WORK, formerly President of the American Medical Association, Postmaster-General in the Cabinet of President Harding, has been appointed Secretary of the Interior.

THE medical library of Sir Norman Walker of Edinburgh has been offered, according to the *Journal of the American Medical Association* of March 10th, to the State University of Iowa College of Medicine, Iowa City, through Dr. Walter L. Bierring, of Des Moines. The gift has been accepted by the university. It is stated that Sir Norman Walker visited the university two years ago and was favourably impressed by the medical work being done there.

THE board of management of the Hull Royal Infirmary has received £2,000 from the Right Hon. T. R. Ferens, High Steward of Hull, for the purchase of the necessary apparatus for the intensive *x*-ray treatment of cancer.

DR. LEONARD GRANT, on leaving New Southgate, where he practised for nearly forty years, has been presented by his friends and patients with a pair of marqueterie cabinets, four silver fruit dishes, and a volume containing the names of eight hundred subscribers. A surplus of over £45 is, at Dr. Grant's request, to be given to the local cottage hospital.

THE Dental Board of the United Kingdom has decided to publish in one volume, with illustrations, the following lectures on the diseases of the periodontal tissues due to infection in their relation to toxaemia: (1) Patho-Histology, by Mr. J. Howard Mummery; (2) Local Clinical Symptoms, by Mr. J. G. Turner; (3) Bacteriology, by Professor E. E. Glynn; (4) Systemic Effects, by Sir William Willcox.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

GALACTORRHOEA.

"E." asks for advice in the treatment of a woman who has suffered from copious galactorrhoea since the birth of a still-born child about a year ago, the milk even spurting across the room when the breasts are pressed. The usual remedies have been tried without effect.

INCOME TAX.

"EXILE" asks, What is the tax (1) on an unearned income of £600 for a married couple with two children (insurance £12 15s.), and (2) if a further £600 income were earned?

*** (1) £48 5s., (2) £182 8s. 9d. It is assumed that the £600 is the profit liable to assessment—that is, the gross receipts less cost of maintaining car, reasonable proportion of rent, rates, and servants' wages, and expense of keeping up stock of instruments, drugs, etc.

Allowable Expenses.

"R. P." inquires as to the following expenses: (1) Car used half for professional and half for private purposes, running and maintenance cost £200 for the year, to include £50 for breakdown and collision expenses when on private use. (2) Cost of post-graduate course. (3) Cost of membership of Royal Sanitary Institute. (4) Cost of additions (not replacements) to stock of surgical instruments.

*** (1) Apparently half of £200−£50=£75 plus one-half of any ordinary wear and tear made good when the special repairs were executed. (2) and (4) Not allowable; these expenses represent the cost of "improvements." (3) A proportion of the subscription may be allowable determined by the ratio of the institute's income to its expenses.

LETTERS, NOTES, ETC.

'Varsity Moonshine, by "Pancreas" (Edinburgh: J. Galloway, 1923. 2s. 3d.), is a little book of rather slangy verses about Edinburgh medical student life, which will doubtless amuse the contemporaries of the anonymous author. He may be congratulated on his enterprise, for many medical students write verses of a sort, but few think of publishing a book of them.

BROKEN NEEDLE IN PERINEUM.

DR. W. H. HENSHAW (Manchester) writes: At a recent labour case I discovered a small black object protruding from the lacerated surface of a ruptured perineum. It was easily seized and withdrawn, and proved to be a portion of a curved needle 1½ in. in length. The previous confinement occurred ten and a half years ago, on which occasion the medical attendant broke the needle whilst suturing the perineum. I believe there was a prolonged search amongst the bedclothes and on the bedroom floor, but without avail. The interesting feature of the case is that this sharp-pointed foreign body should remain *in situ* for such a long time without giving rise to any pain or discomfort.

TWO NECROPSIES.

DR. W. LLOYD-WILLIAMS (Burgess Hill) writes: The two following records of necropsies done recently are, I think, worth publishing:

Three-lobed Left Lung.—A man, aged 45, died suddenly. There was atheroma of the coronary arteries, with thinning and softening of the myocardium. The left lung had three lobes of almost symmetrical size to those of the right. The sulcus between the upper and middle lobes was about one and a half inches deep.

Effect of Parathyroid on Blood Pressure.—A woman, aged 60, who had had previous fainting attacks, died suddenly. The most prominent pathological lesions were some hypertrophy of the left ventricle, atheroma of the aorta and coronary arteries, the latter being partially calcified, and arterio-sclerosis (general). About an hour before death parathyroid extract, gr. 1/8, had been administered for the treatment of a varicose ulcer. I should be glad to know if the parathyroids have any known effect on blood pressure, because, if so, they would appear to be contra-indicated in a case such as that just quoted.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 27, 28, 31, 32, 33, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *99*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.